ENGINEERING NEWS-RECORD

A McGRAW-HILL PUBLICATION

Norton Company has a tough assignment for heat exchanger tubes—in a sand drier that removes moisture from the abrasive materials used in its grinding wheels, refractories, laboratory ware, non-slip tiles, and other products. The tubes, which carry steam or hot water, are housed in a rotating shell filled with the sand. As an answer to the double-threat of corrosion and abrasion, Norton engineers installed tubes of Byers Wrought Iron.

This is not a new experience for wrought iron. It has been utilized in sand driers for a number of years, and so has had an opportunity to demonstrate its superior service properties.

The ability of wrought iron to stand up under these severe conditions comes from the unique nature of the material. Tiny fibers of glass-like silicate slag, threaded through the body of high-purity iron, halt and "detour" corrosive attack, which discourages the local pitting and rapid penetration that causes ordinary materials to fail prematurely. Furthermore, the fibers help to anchor the initial protective scale, which shields the underlying metal just as a scab protects a wound.

Byers Wrought Iron has been used in so many applications that it is difficult to completely suggest its possibilities in limited space. There may be places in your operations where some service is demanding frequent replacements, and where wrought iron could fit in and reduce maintenance costs for you. Our bulletin, 101 USES FOR WROUGHT IRON pictures a wide variety of jobs that wrought iron is doing, and might provide you with some helpful hints. May we send you a copy?

A. M. Byers Co., Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, Salt Lake City, San Francisco. Export Division: New York, N. Y.

BYERS
GENUINE WROUGHT IRON
TUBULAR AND HOT ROLLED PRODUCTS
ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS

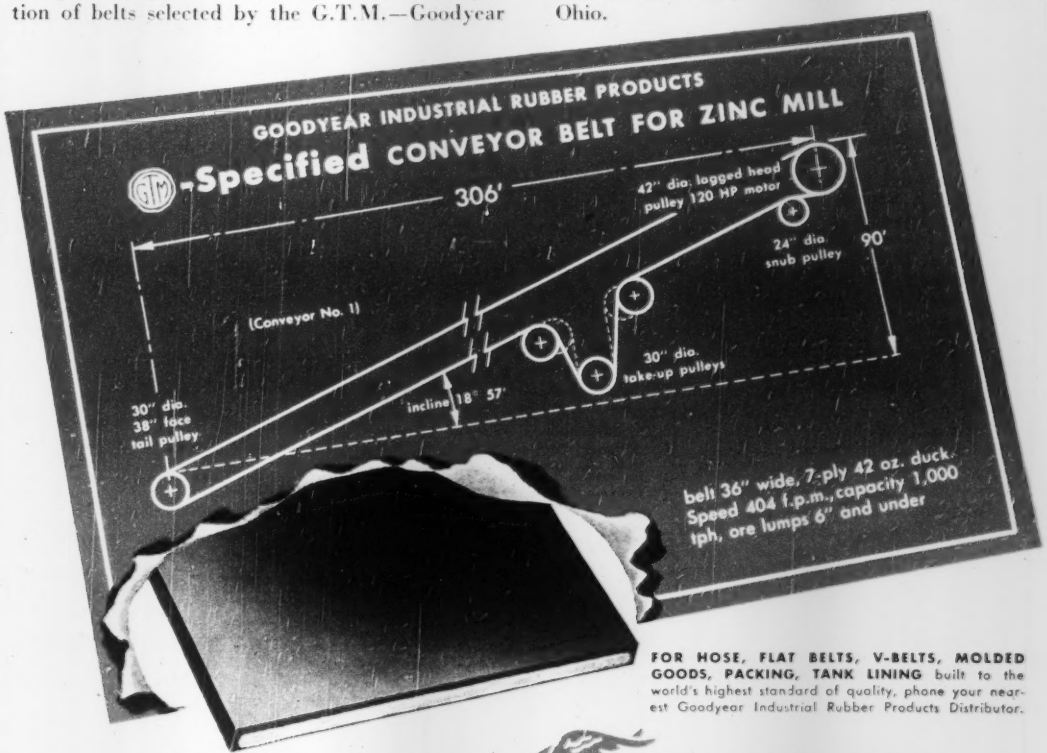
Conveyor belts set

new tonnage records

in zinc mill

Belt No. 1—Goodyear Conveyor handled 7,783,000 tons of ore
Belt No. 2—Goodyear Conveyor handled 9,779,433 tons of ore

A WESTERN zinc mill reports ore tonnages handled by Goodyear conveyors far exceeding previous records handled by other belts. In plant after plant, records like this—more tons handled at far lower cost-per-ton figures—have come from the installation of belts selected by the G.T.M.—Goodyear Technical Man. Ask the G.T.M. to figure *your* conveyor, either new or replacement, over long or short distances. You can reach him through your nearest Goodyear Industrial Rubber Products Distributor, or by writing Goodyear, Akron 16, Ohio.


GOODYEAR INDUSTRIAL RUBBER PRODUCTS
G.T.M.-Specified CONVEYOR BELT FOR ZINC MILL
306'
42" dia. lagged head pulley 120 HP motor
24" dia. snub pulley
90'
(Conveyor No. 1)
30" dia. take-up pulleys
30" dia. 38" face tail pulley
incline 18° 57'
belt 36" wide, 7-ply 42 oz. duck. Speed 404 f.p.m., capacity 1,000 tph, ore lumps 6" and under

FOR HOSE, FLAT BELTS, V-BELTS, MOLDED GOODS, PACKING, TANK LINING built to the world's highest standard of quality, phone your nearest Goodyear Industrial Rubber Products Distributor.

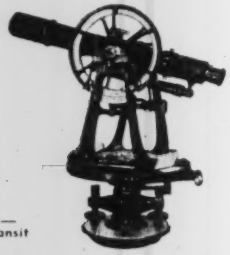
GOODYEAR

THE GREATEST NAME IN RUBBER

for three quarters of a century

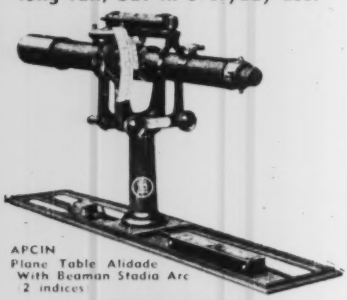
BERGER TRANSITS, LEVELS, ALIDADES and COLLIMATORS

have engineered with unfailing accuracy and eliminated costly errors on Roads, Highways, Building Construction, Bridges, Dams, Hydroelectric Developments and Geological Surveys and Maps as well as thousands of other projects of distinction, large and small.



No. 6¼—R—
BUZKA Transit

You work fast and accurately with a BERGER instrument—you get more work done in a day. Instrument errors are eliminated, costly manpower is saved and, equally important, *you go for years if not for a lifetime without "laid up" instruments and repair bills.* BERGER means the ultimate in Sustained Accuracy, Perfection of Scientific Construction and Precision Optics—unparalleled economy, not only in the long run, but in everyday use.



APCIN
Plane Table Alidade
With Beaman Stadia Arc
2 indices

Leadership **BERGER** *Since 1871*

THIS COUPON BRINGS DATA

C. L. BERGER & SONS, INC. 8350
37 WILLIAMS ST.
ROXBURY BOSTON 19, MASS.

Send Literature on TRANSITS LEVELS
ALIDADES COLLIMATORS

Name

Title

Company

Address

City Zone State

ENGINEERING NEWS-RECORD

ABP Member ABC

Volume 145 AUGUST 3, 1950 No. 5

WALDO G. BOWMAN
Editor

FEATURES IN THIS ISSUE

Diversion Flume at Canyon Ferry Dam.....W. P. Price, Jr. 32

Asphalt Underseal Restores Canal
J. R. Benson and L. M. Ellsperman 35

Fast Work on Aluminum Siding..... 37

Light Control.....R. L. Zahour 38

Unit Travelers for Viaduct Construction..... 40

Intercepted Grit Prevents Pollution.....P. D. Oesterle 42

Services Integrated in Hospital Design.....P. A. Kelly 44

Perspective—Timetable: World War II..... 112

DEPARTMENTS

Construction Week 17
Construction Trends 19
Editorials 21
News of the Week 23
Reader Comment 47
Field and Office 48
Developments Abroad 51
Municipal Affairs 52
Men and Jobs 55
Education and Research 62
Election and Activities 64
Obituaries 67
Unit Prices 68
Construction Reports 71
New Products 101

Number of copies of this issue printed 45,347

Managing Editor—Eugene E. Halinen, Jr.

Associate Editors—*New York*, V. T. Boughton (senior associate), J. C. Bumstead, R. H. Dodds, R. N. Larkin, F. S. Merritt; *Chicago*, J. R. Carr; *San Francisco*, N. A. Bowers, L. L. Wise; *Washington*, V. B. Smith.

Assistant Editors—*New York*, Melvin Dean, Arthur J. Fox, Jr., T. D. MacGregor.

Staff Assistants—Mary Kiernan, *Research*; Ethel Lyon, *Makeup*; R. P. Minves, *Production*; Louise Barker, Ruth McCarthy, Madalene Smith, *Editorial*.

Business News—Elsie Eaves, *Manager*; E. M. Huber, Jane Lucia, J. A. Mahoney, Frederick Lee Moore, Jr., M. W. Roessler, M. Weitzel.

Contributing Editor—Edward J. Cleary.

Domestic News Bureaus—Atlanta, Chicago, Cleveland, Detroit, Houston, Los Angeles, San Francisco, Washington. Correspondents in 71 cities in the United States, Canada and Mexico.

Foreign News Bureaus—London, Frankfurt, Paris, Moscow, Tokyo, Bombay, Melbourne, Rio de Janeiro, Mexico City. *Correspondents*—Athens, Rome, Caracas, Buenos Aires, Santiago, Shanghai, Zurich, Johannesburg and 40 other cities.

ROBERT F. HOGAN
Publisher

August 3, 1950 ENGINEERING NEWS-RECORD Vol. 145—No. 5

Publication Office 99-129 N. Broadway, Albany 1, N. Y.
Executive and Editorial Offices 330 West 42nd St., New York 18, N. Y.

Copyright 1950 by McGraw-Hill Publishing Co., Inc. All rights reserved. Published every Thursday by the McGraw-Hill Publishing Co., Inc. James H. McGraw (1860-1948), Founder. CURTIS W. McGRAW, President; WILLARD CHEVALIER, Executive Vice President; JOSEPH A. GERARDI, Vice President and Treasurer; JOHN J. COOKE, Secretary; PAUL MONTGOMERY, Senior Vice-President, Publications Division; RALPH B. SMITH, Editorial Director; NELSON BOND, Vice President and Director of Advertising; J. E. BLACKBURN, JR., Vice President and Director of Circulation. Cable address, "McGrawhill, New York."

Subscriptions (1 yr., 2 yrs.) to U. S. and possessions $6, $10, $12; Pan American, $10, $16, $20; Canada, $8, $12, $16. All others, $20, $30, $40.

Address all communications about subscriptions to Director of Circulation. Price 35c per copy.

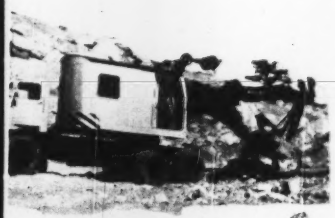
Please indicate position and company connection on all subscription orders.

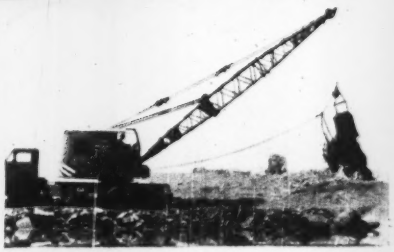
Entered as Second Class matter October 26, 1916, at the Post Office at Albany, N. Y., under Act of March 3, 1879. Printed by U. S. A.

The COMBINATION makes the outstanding TRUCK CRANE

The Finest CARRIER

The Finest CRANE





Remember it takes *two* major pieces of equipment to make a good Truck Crane! A feature that may look fine in the crane isn't worth much if you can't get it to the job when you want it—because of Carrier trouble.

You aren't buying a "Crane" and you aren't buying a "Carrier"—it isn't a type of drive or a method of control you want. You are buying versatility in material handling ability, high output and the maximum in mobility. That's what makes money in a Truck Crane.

When you are figuring on a Truck Crane weigh *all* the advantages of the unit as a whole. The Northwest Truck Crane has been designed to produce full efficiency with any attachment—Crane, Shovel, Dragline or Pullshovel.

Don't overlook Carrier details and don't be misled by selling statements that "carriers are all alike" and that "the same people build them". You will find other equipment may be often referred to as "A Good Crane" but Northwest is universally recognized as a leader for quality both in Crane and Carrier. We'd like to tell you in detail why and where the Northwest Truck Crane and Carrier are better.

NORTHWEST ENGINEERING CO.
1502 Field Bldg., 135 South LaSalle St., Chicago 3 Ill.

IN SERVICE ALL OVER THE COUNTRY!

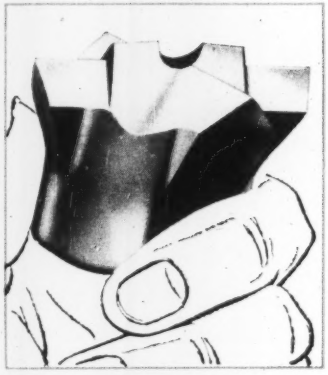
NORTHWEST

CRAWLER and TRUCK MOUNTED SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

Only TIMKEN® offers all 3 types of rock bits...

1. **MULTI-USE** Basic removable rock bit for 18 years. Gives lowest cost per foot of hole when full increments of drill steel can be drilled and when control and reconditioning of bits are correct. Low cost! Requires less policing than carbide insert bits.

2. **CARBIDE INSERT** For extremely hard and abrasive ground, small holes, extra deep holes. Gives you more drilling time—less time changing bits. Holes go down faster. Reconditioning is simplified. Offers many advantages which compensate for higher unit cost.



3. **ONE-USE "SPIRALOCK"** For use where reconditioning is impractical or undesirable. Offers lowest unit bit cost. New "Spiralock" union holds bit dependably—permits easy removal. Simplifies drill steel preparation. More bit applications per drill steel.

and a complete Rock Bit Engineering Service!

WHICH bit is your best bet? Timken makes *all three* types—multi-use, carbide insert and one-use "Spiralock"—in a variety of series and sizes. And to help you choose the one bit that's best for your job, Timken offers a *complete* Rock Bit Engineering Service. Timken has been solving rock bit problems for over 17 years and our Rock Bit Engineering Service is qualified to help solve your problem. Whether you're looking for lower bit cost, lowest cost per foot of drilled hole, greatest possible drilling speed or any other advantage, our engineers, with *all three* types of rock bits to draw upon, can find the answer for you.

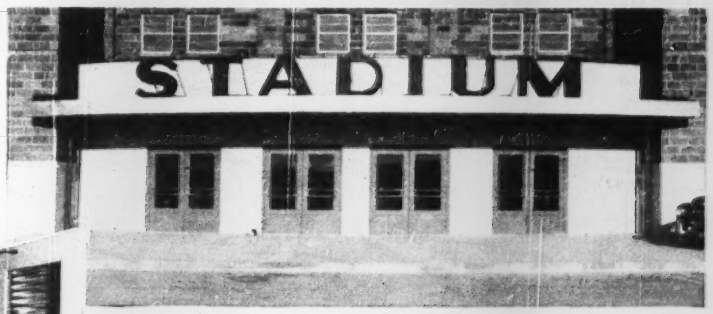
The Timken Rock Bit Engineering Service is at your disposal. For information and help, contact The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

TIMKEN

... your best bet for the best bit ... for every job

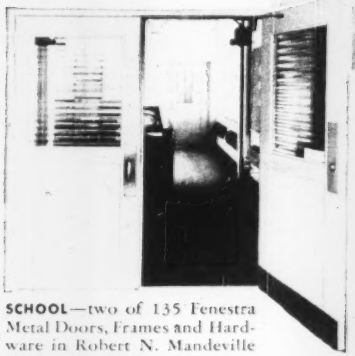
FREE BOOKLET: *Everyone who buys rock bits should have a copy. Gives full information on all three types of Timken rock bits and the Timken Rock Bit Engineering Service. Shows full line of bits in actual-size photographs, with detailed descriptions. Write The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".*

These high-quality, low-cost Door Units take the Toughest Treatment... *and still look like new!*



STADIUM—Fenestra Entrance Doors in the Stadium at Grand Rapids, Michigan.

Architect: Wilfred P. McLaughlin, Grand Rapids
Contractor: George Datema & Sons Builders, Inc., Grand Rapids



SCHOOL—two of 135 Fenestra Metal Doors, Frames and Hardware in Robert N. Mandeville High School, Flint, Mich.

Architect: Bennett & Straight, Dearborn, Mich.
Contractor: Karl B. Foster, Flint, Mich.

SUPER MARKET—Fenestra Entrance Doors, Frames and Hardware in Eberhard's Super Market, Grand Rapids, Mich.

Same Architect and Contractor as Stadium.

A stadium entrance jammed with jostling crowds. School kids opening classroom doors with their feet. A super market seething with shoppers. In and out . . . out and in . . . all day long. That's tough treatment! And that's one of the reasons why Fenestra* Hollow Metal Doors were selected for those spots. They won't sag, warp, swell, shrink or splinter . . . an occasional coat of paint makes them look like new.

Some of the other reasons:

1. **High Quality**—Fenestra Hollow Metal Doors are made by craftsmen long skilled in steel fabrication. Each door is insulated for quiet performance. Each comes wrapped to protect the gleaming finish.
2. **Complete Unit**—Door, strong steel frame and shining hardware, designed as an attractive unit, ready to install.
3. **Low Cost**—Standardized, Fenestra Doors can be produced in great volume for maximum manufacturing efficiency. Mortising, drilling, tapping and prime painting are all done *at the factory*. To install, builders just bolt the frame together, attach frame to floor and anchor to walls, screw on template locks and hinges, hang the door.
4. **Delivery in 2-3 weeks**—Action is taken upon receipt of your order. Local stocks can usually deliver immediately.

Fenestra Doors with the Underwriters' B Label are also available. Call your Fenestra representative, listed in the yellow pages of your telephone directory or . . .

*Trademark

Fenestra
DOORS • WINDOWS • PANELS

MAIL THIS COUPON

DETROIT STEEL PRODUCTS COMPANY
Door Division
Dept. 18-8, 2277 E. Grand Boulevard
Detroit 11, Michigan

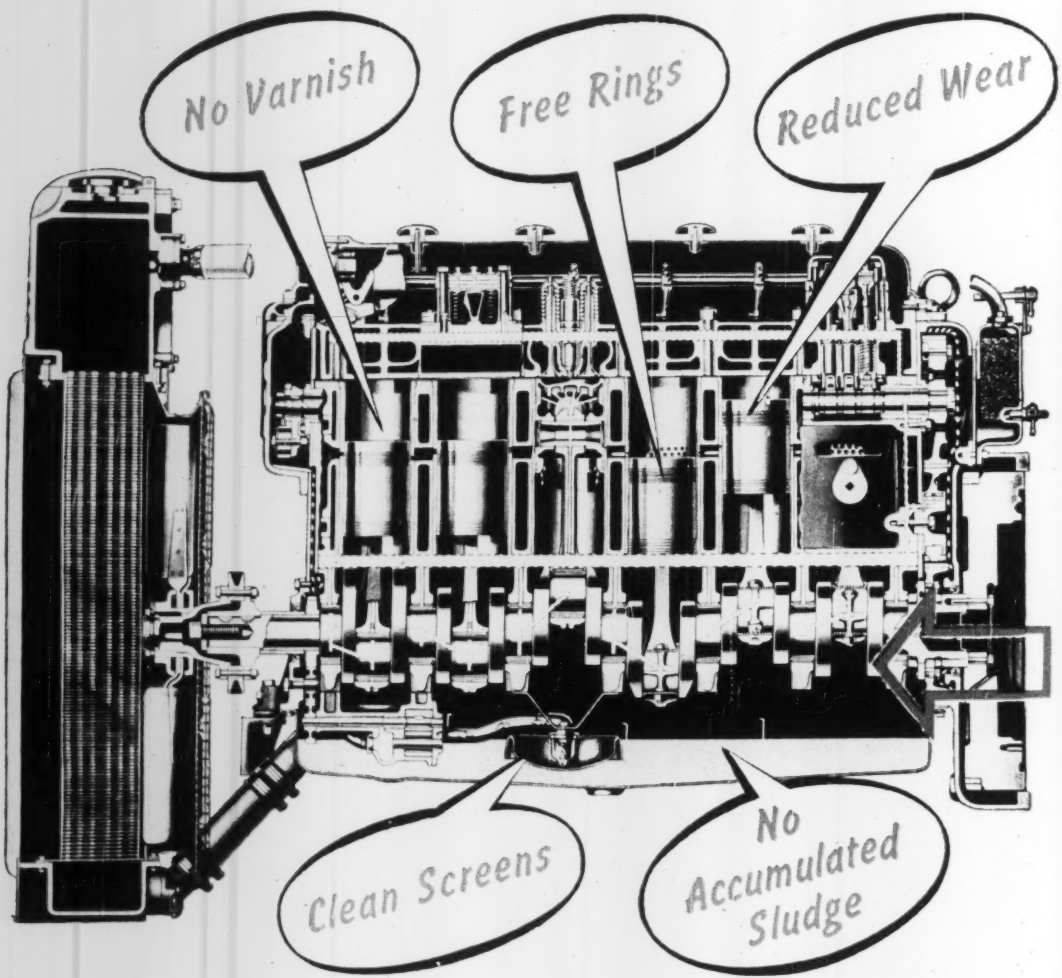
Please send me, without obligation, information on Fenestra Stock Hollow Metal Doors.

Name _____

Company _____

Address _____

In SEVERE DUTY Can Double Engine



SINCLAIR HEAVY

Your Nearest Supplier of Sinclair Products Will Gladly Arrange for Lubrication

New *SUPER TENOL*
Life Between Overhauls

New Sinclair SUPER TENOL is an oil specially developed to eliminate the high maintenance costs so frequently encountered in both types of "severe duty" service: — 1. High temperature, high speed, over-load; and 2. Low temperature, light load, long idle, stop-and-go.

Under these abnormal conditions, operators report new SUPER TENOL has more than DOUBLED the life of their equipment between overhauls.

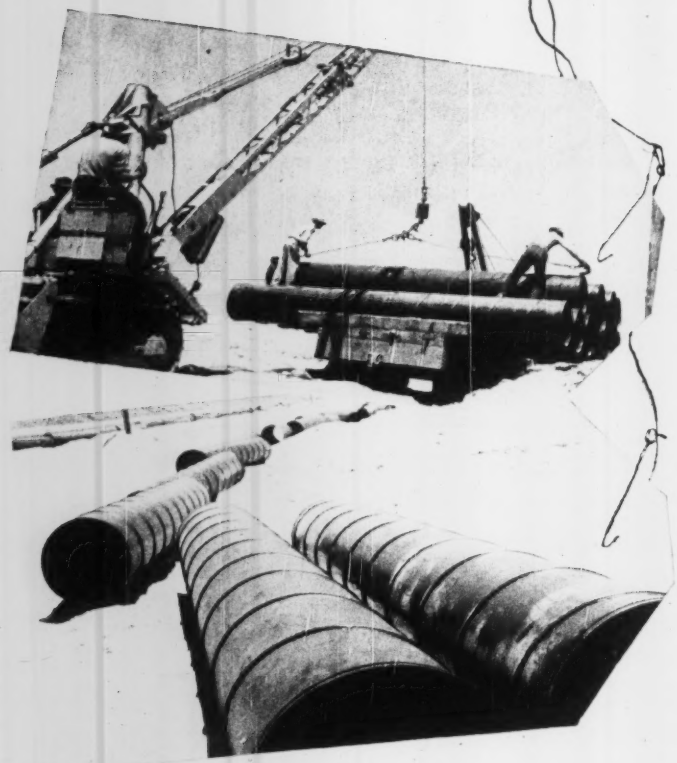
If you operate diesel-powered or gasoline equipment in severe duty service it will pay you to change to new SUPER TENOL now—to keep equipment in operation many more days each year, to save time, labor and money.

DUTY LUBRICANTS

Counsel or Write to Sinclair Refining Company, 630 Fifth Avenue, New York 20, N. Y.

Tag Jobs Like These for

NAYLOR PIPE



Once you work with Naylor Pipe, you'll know why so many contractors depend on it.

No other light-weight pipe can give you Naylor performance because no other pipe has the exclusive Naylor Lock-seam Spiralweld structure. This difference adds up to pipe that is extra strong and safe, easy to handle and install—pipe that gives you *plus* value right down the line.

Job-prove these Naylor advantages for yourself. Whether it's pipe for high or low pressure air and water, de-watering and drainage, dredging, hydraulic sluicing, sand and gravel conveying or other service, you'll do better with Naylor.

Sizes from 4 to 30 inches in diameter, lengths up to 40 feet, thicknesses from 14 to 7 gauge. All types of fittings, connections and fabrication.

NAYLOR PIPE COMPANY
1248 East 92nd Street, Chicago 19, Illinois
New York Office: 350 Madison Avenue, New York 17, N. Y.

NEWS BRIEFS

The Payoff—Virginia's continuing tests of highway marking paints saved $88,000 last year. Eleven different kinds of plain white and reflectorized paints were studied under varying conditions on six highways. The job is being done by the Council of Highway Investigation and Research, at the University of Virginia.

Architects for Defense—New York Chapter, American Institute of Architects, will form a Committee on Civilian Defense, to assist New York City's Civil Defense Director in planning measures related to structural protection.

Detour—Traffic's getting so heavy on the Pennsylvania Turnpike that trucks carrying explosives and inflammables no longer will be permitted to use the seven tunnels on the road. Heretofore, they've been allowed through the tunnels between midnight and 8 a. m., except on holidays and holiday weekends. Since 1943, other traffic has been kept out of the tunnels while such trucks were using them. Even at such hours, that stacked up traffic too much, the Turnpike Commission found.

Business Should Boom—Alaska's first bulk-cement distribution plant has been opened at Anchorage—just in time for a defense construction boom, perhaps. It has two 15,000-bbl silos which will be fed by converted LST's towed by tug from Seattle. Permanente Cement Co. is the owner.

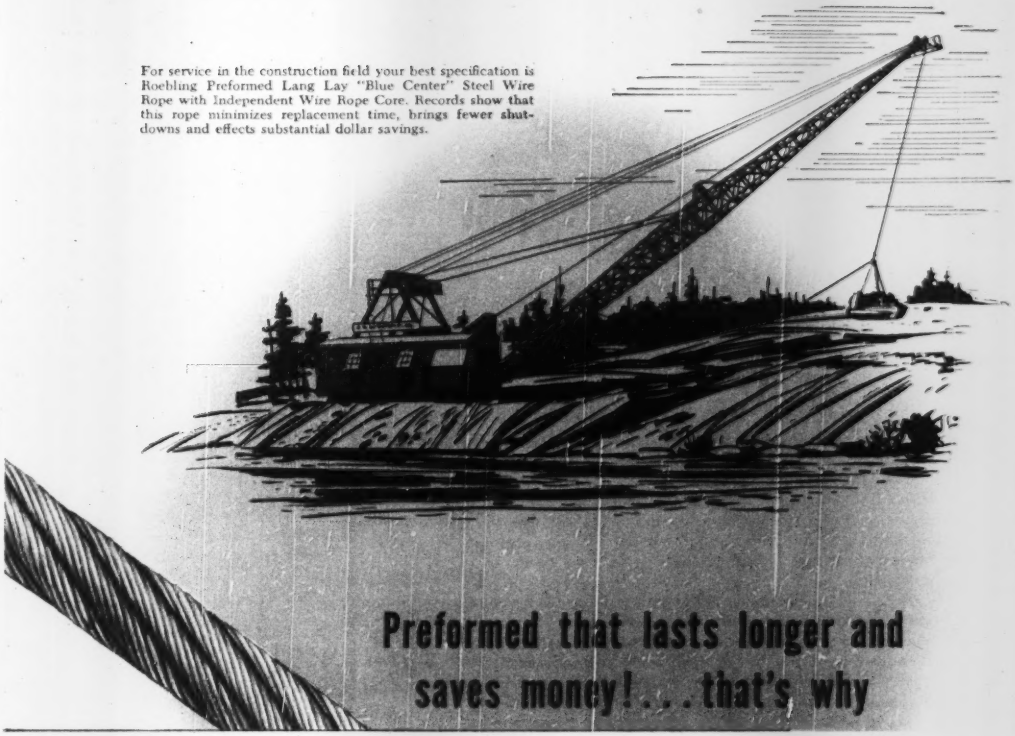
Hurry, Hurry, Hurry—New York State's Thruway Authority is studying the possibility of accelerating the $450 million New York-Buffalo highway which is now scheduled for completion in 1954. Special emphasis will be laid on accelerating completion of portions serving metropolitan areas if the whole job can't be rushed. It's figured as an important military road.

Who, the Pupils?—Virginia's pay-as-you-go financing will include a four-year, $77,377,278 school-construction program, Gov. John Battle has announced.

Goodbye, Mr. Rat—New York City has appointed a former Army Engineer to cut down its rat population. Col. William A. Hardenbergh, chief sanitary engineer for the Army during the last war, has been named a special

(Continued on page 10)

For service in the construction field your best specification is Roebling Preformed Lang Lay "Blue Center" Steel Wire Rope with Independent Wire Rope Core. Records show that this rope minimizes replacement time, brings fewer shut-downs and effects substantial dollar savings.



Preformed that lasts longer and saves money!... that's why

Today it's Roebling!

YOU WANT ROPE that's *extra* tough, *extra* long-lived! And you *get* these extras in Roebling Preformed "Blue Center" Wire Rope, for "Blue Center" steel has completely superior resistance to abrasion, shock and fatigue. Roebling developed and is the only maker of "Blue Center" steel . . . and Roebling research, workmanship and modern, precision machines are your added assurance of rope quality that pays off.

But for everything wire rope can give, be sure to get Preformed. Roebling Preforming makes rope easier to handle and install. It can be cut without seizing. It spools better . . . is not inclined to set or kink . . . minimizes vibration and whipping.

There's a Roebling wire rope of the right construction, grade and size for every type and make of rope-rigged equipment. Have your Roebling Field Man tell you which rope will give the best and the lowest-cost performance for every installation. John A. Roebling's Sons Company, Trenton 2, New Jersey.

ROEBLING

A CENTURY OF CONFIDENCE

Atlanta, 931 Avon Ave. ★ *Boston*, 51 Sleeper St. ★ *Chicago*, 5525 W. Roosevelt Road ★ *Cincinnati*, 3253 Fredonia Ave. ★ *Cleveland*, 201 St. Clair Ave., N. E. ★ *Denver*, 4801 Jackson St. ★ *Houston*, 6216 Navigation Blvd. ★ *Los Angeles*, 216 S. Alameda St. ★ *New York*, 19 Rector St. ★ *Philadelphia*, 12 S. Twelfth St. ★ *Portland*, 1032 N. W. 14th Ave. ★ *San Francisco*, 1740 Seventeenth St. ★ *Seattle*, 900 First Ave. S.

Are you "missing a bet" on foundation jobs?

More and more contractors are discovering they can profitably handle many foundation jobs with the aid of Armco Steel Pipe Piles.

Either light or heavy Armco Spiral Welded Pipe can be driven with ordinary contractor's equipment. No top reinforcement is required. Cone points, end-closure plates or cutting shoes are mill-attached to save time and trouble in the field.

Cutoffs can be economically salvaged because Armco Pipe is uniformly round and straight. This also reduces the number of crooked or rejected piles and piles with specified load reduction. Inspection of dry piles is a simple matter.

Armco Pipe is available in any length that can be handled and shipped in diameters from 6 to 36 inches with wall thicknesses up to ½-inch. Write for complete information on Armco Foundation Pipe. Armco Drainage & Metal Products, Inc., Welded Pipe Sales Division, 5570 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation.

Export: The Armco International Corporation

Armco Foundation Pipe

ARMCO

(*Continued from page 8*)

consultant to several city departments. Cleanup of vacant lots, cooperation by landlords and tenants in garbage handling, trapping and poisoning will be major parts of the new campaign. Special attention will be paid to prevention of rat migrations between boroughs.

Who Gets the Dough?—University of Pennsylvania has undertaken a research assignment for the Housing and Home Finance Agency aimed at determining the costs of marketing building materials. It'll be carried out in Philadelphia and one or more other cities, will attempt to enlist builders, dealers and manufacturers.

Spend It to Make It—It's ok for Kentucky's highway department to spend $250,000 yearly to advertise for tourist trade, a state court has ruled. The cost is "relatively nothing in comparison with the huge amount of revenue they attract into the road fund," the court ruled in dismissing the state Finance Commissioner's suit to halt the advertising. In 1949, the court said, out-of-state motorists paid $6,000,000 in gas taxes which went into the road fund.

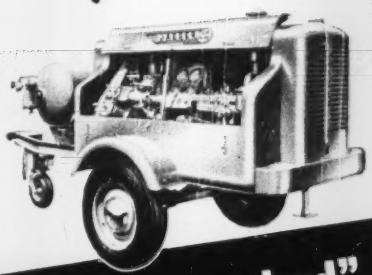
THE COVER

In World War II, following the establishment of a European bridgehead by the Normandy invasion, the first essential was a port of supply. This was Cherbourg. And in fitting it to receive some 25,000 tons of materiel daily, the Army Engineers turned in one of their greatest construction jobs of the war.

Wharfs like they built at Cherbourg may soon be required at Pusan, in Korea. Already operating as our port of supply, and not damaged like Cherbourg, Pusan is said to have good docking facilities. But when our bridgehead around it is definitely stabilized, and the buildup begins for the offensive, it too may require expansion. Then, once again, construction will be in the communiques, along with Engineer general service regiments and Seabee battalions. Then another phase of war's familiar pattern will begin.

same men, *same* tools do

4 days' work in 3



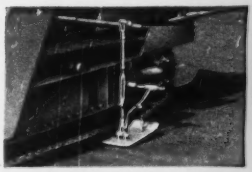
the "new standard" JAEGER 125 FT.

keeps 2 big breakers hitting at top pressure—30% to 40% more output than same tools with 105 ft. of air

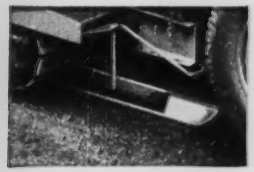
Every Jaeger "new standard" compressor delivers 15% to 25% more air than old ratings, at full 100 lbs. pressure. From the Model 75 (for one heavy breaker) to the Model 600 (for 2 heavy wagon drills) that higher capacity insures steady full pressure instead of weak 70 lbs. pressure behind your tools—as much work done in 3 days as you used to do in 4—with the same men and tools.

Ask your Jaeger distributor to prove this—on your job

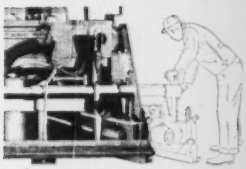
ONLY THE JAEGER BITUMINOUS PAVER has these 8 advantages



Automatic Grade Matching

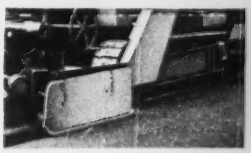


12' Equalizing Runners

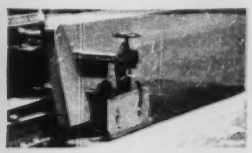


Instant Width Change up to 12½'

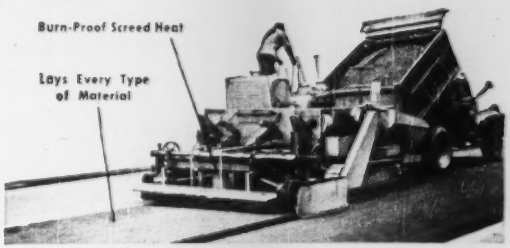
Oscillating Bevel-Tooth Screeds



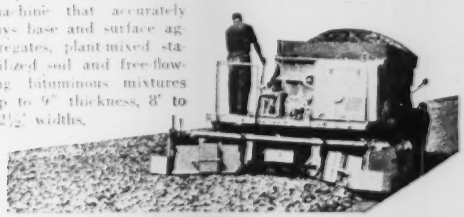
No Weight to Seal New Mat



Lays Flush to Curbs



For all types of bituminous paving no other machine approaches the Jaeger BP-5—and its "team mate," the *Self-Propelled Aggregate Spreader* (below), the first low cost machine that accurately lays base and surface aggregates, plant-mixed stabilized soil and free-flowing bituminous mixtures up to 9" thickness, 8' to 12½' widths.

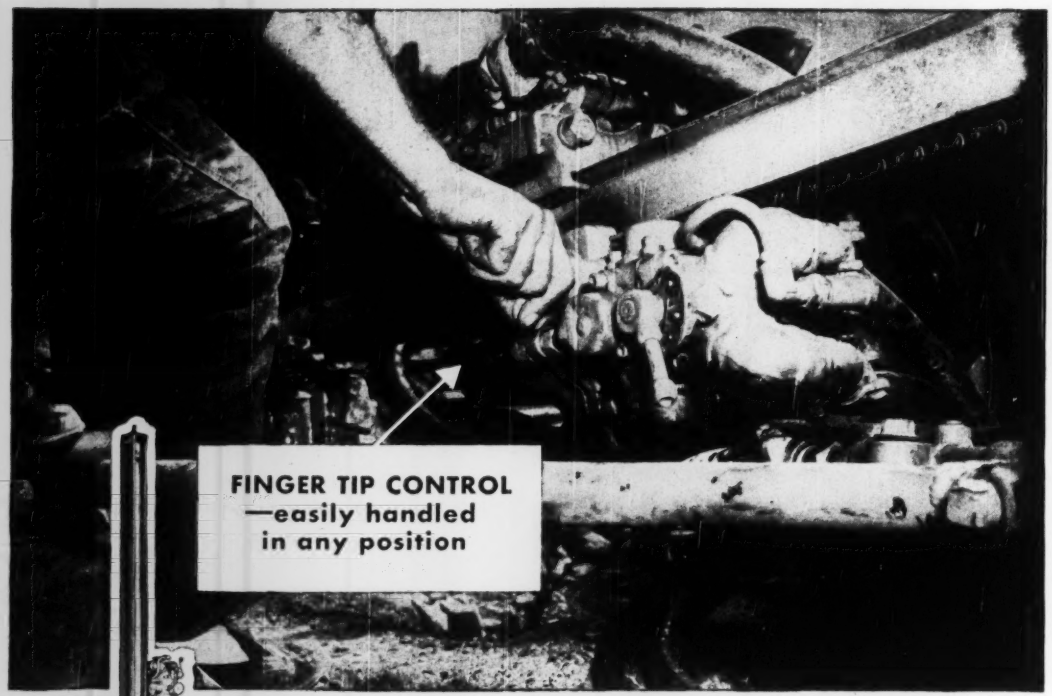


THE JAEGER MACHINE COMPANY

Columbus 16, Ohio—Cable Biganlitle

Leading distributors in 130 cities of the United States and Canada sell, rent and service Jaeger Engineered Equipment

PUMPS • AIR COMPRESSORS • MIXERS • TOWERS
BITUMINOUS PAVERS • CONCRETE SPREADERS and FINISHERS



The PIONEER and still the LEADER!

JOY LIGHTWEIGHT WAGON DRILL

Introduced by JOY
8 years ago—hundreds
in use, nation-wide . . .

HERE'S WHY:

- MORE HOLE PER SHIFT with the *exclusive* "drill and blow" feature.
- REALLY LIGHTWEIGHT—only 750 lbs.—less than half the weight of conventional wagon drills.
- Easily operated by ONE MAN; mounts JOY 3" or 3½" drifters, or 55 or 65 lb. sinkers.
- POSITIVE LOCKING BRAKES—requires no spikes.

WRITE FOR BULLETIN

WBD C 2073

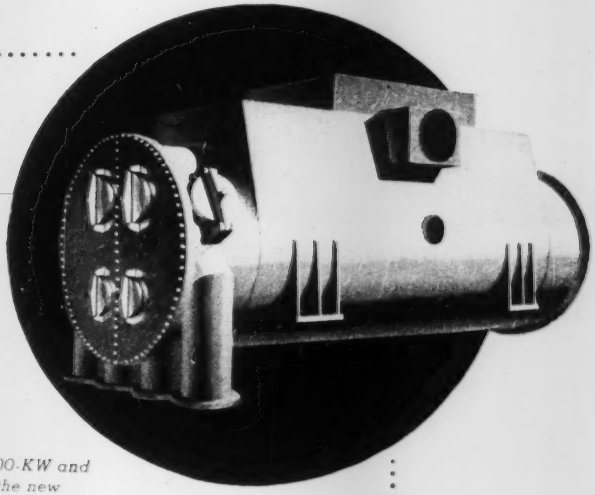
Consult a Joy Engineer

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

New Design Condenser Gives Turbine a Lift



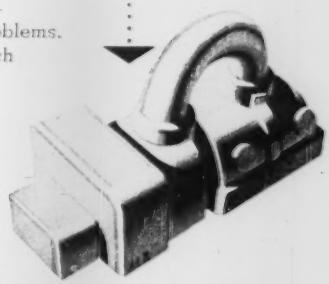
PROJECT: *To expand station facilities by 7500-KW and economically improve the efficiency of the new turbo-generator unit. Brackish tide water containing salt concentrations as high as 2000 parts per million used as condenser coolant.*

DESIGN: *New, higher vacuum condenser with tube sheets of Lukens Monel Clad Steel welded into the shell with the shell extended at both ends to form the water boxes. Monel inner surfaces for corrosion-resistance, low-cost steel backing for operating strength. Tubes sealed by roller expanding at both ends with no expansion joint used in shell. Atmosphere relief valve within condenser shell to save external space and additional supports normally required. Welded plate design to save weight and permit condenser to hang unsupported on turbine exhaust housing.*

END RESULT: *Expanded capacity achieved over 10-year period with economy and minimum maintenance. Condenser still gives better than 29" Hg vacuum, despite 122 back-offs due to load conditions.*

Here is another excellent example of how the coordinated ingenuity of designer, engineer, fabricator and materials supplier not only solved a problem, but did it in a way that meant low first cost plus economical, maintenance-free operation. These benefits are the results of applied *Lukenomics*. For Lukenomics combines the experience of equipment designers and builders with Lukens' knowledge of materials and their application, gained over 140 years as the world's leading producer of specialty steel plates, heads and steel plate shapes.

It's sound judgment to put Lukenomics to work on your equipment problems. There are progressive fabricators who can do this for you. Get in touch with them, or write our Manager of Marketing Service, stating your problem. Lukens Steel Company, 513 Lukens Building, Coatesville, Pennsylvania.



The above condenser was designed and fabricated by The Lummus Company for a power company located on the Atlantic seaboard. Lukens Monel-Clad Steel was used because it gave solid corrosion-resistant metal protection with clad steel economy.

LUKENS

LUKENS STEEL COMPANY

BETTER PRODUCTS FOR BETTER EQUIPMENT

COMPRESSION-TYPE VALVE PREVENTS LEAKAGE AND FLOODING

Traffic accidents are a problem to consider in buying fire hydrants today. What happens when a hydrant is the loser in an argument with a 10-ton truck? Your community can rely on the Mathews Modernized Hydrant to make the best of a bad job. Rest assured there will be no flood damage to cause law suits. Its compression-type valve prevents leakage—and replacement takes only a few minutes. Depend on Mathews, the leader for more than three-quarters of a century.

MATHEWS HYDRANTS

Made by R. D. Wood Company
Public Ledger Building, Independence Square
Philadelphia 5, Pa.

Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves

MATHEWS MODERNIZED HYDRANTS SET THE PACE: Easily maintained, because simple in construction • All working parts contained in replaceable barrel • Stuffing box cast integral with nozzle section • Head can be turned 360° • Replaceable head • Nozzle sections easily changed • Nozzle levels raised or lowered without excavating • Protection case of "Sand-Spun" cast iron for extra strength, toughness, elasticity • Operating thread only part to be lubricated • A modern barrel makes an old Mathews good as new

RAYMOND

SERVING GULF OIL FOR 40 YEARS

THROUGH THE YEARS, the Gulf Oil Corporation has called in Raymond again and again to expand its facilities. For example:

At Gulf's marine terminal in Port Arthur, Texas, Raymond completed in 1941 a marginal wharf 52 feet wide and 1053 feet long. Later two similar sections were added to make the wharf more than a half mile long. Last year Raymond reinforced the existing wharf with reinforced concrete and constructed a new wharf 52 feet wide along its entire face—doubling the deck area and permitting deeper dredging to accommodate large vessels. The job was completed well ahead of schedule and with a minimum of interference with Gulf's normal docking operations.

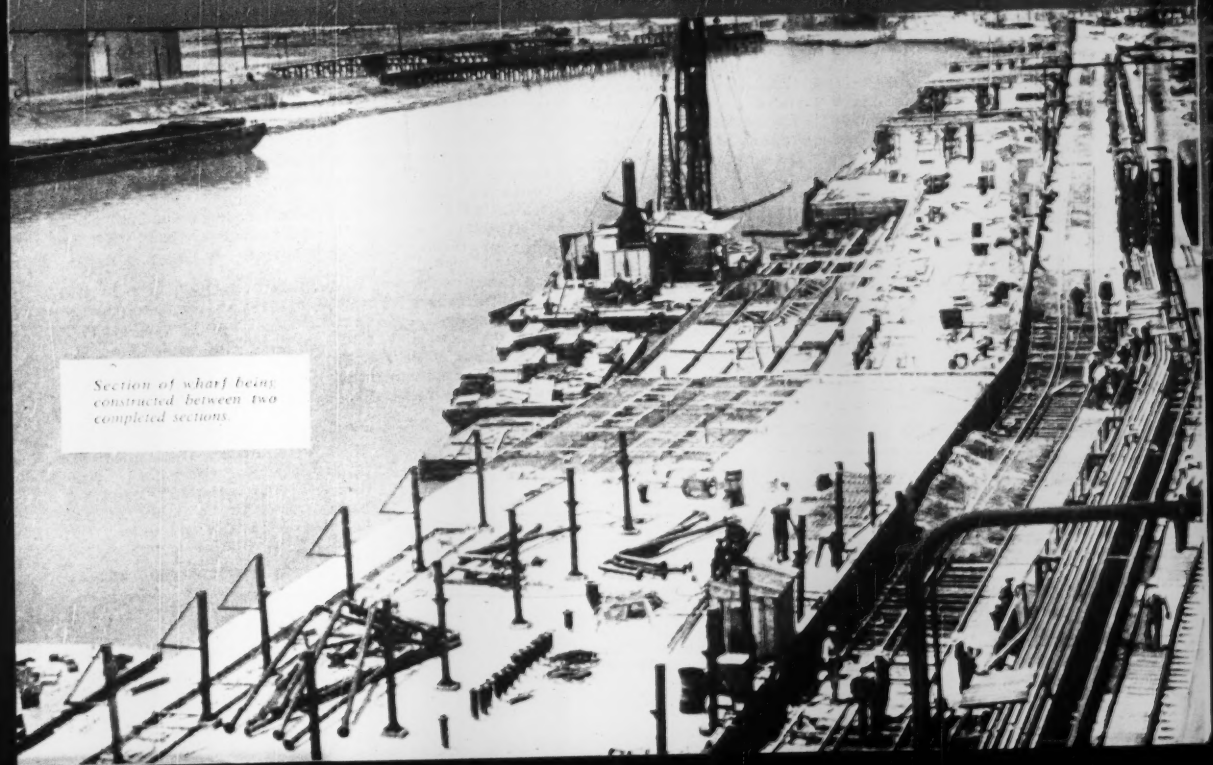
Gulf Oil is one of the leading oil companies which have consistently turned to Raymond for important foundation and structural projects. This wealth of experience is at your disposal.

THE SCOPE OF RAYMOND'S ACTIVITIES—includes every recognized type of pile foundation—concrete, composite, precast, steel, pipe and wood. Also caissons, underpinning, construction of docking shore protection, shipbuilding facilities, harbor and river improvements, borings for soil investigations, and cement mortar lining of pipes by the Centriline Corporation, a Raymond Subsidiary.

RAYMOND CONCRETE PILE COMPANY

140 CEDAR STREET, NEW YORK 6, N. Y.

BRANCH OFFICES: Boston, Syracuse, Philadelphia, Baltimore, Washington, Pittsburgh, Atlanta, Miami, Houston, Kansas City, St. Louis, Cleveland, Chicago, Detroit, Salt Lake City, Portland, San Francisco, Oakland, Los Angeles and principal cities in Latin America.



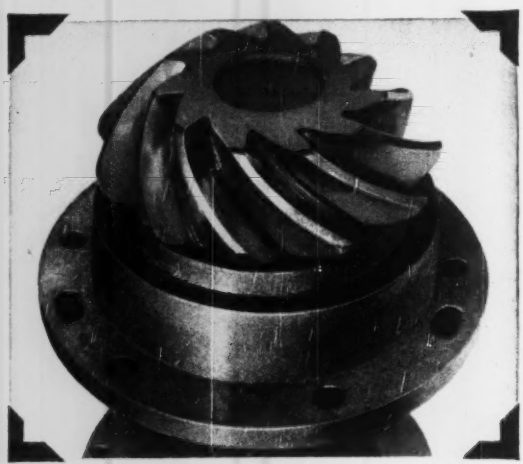
Section of wharf being constructed between two completed sections.

STANDARD ENGINEER'S REPORT

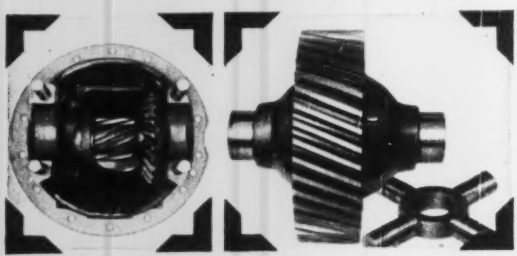
DATA

LUBRICANT RPM Multi-Service Gear Lubri.
UNIT "Semi" Truck and Trailer
PART Final drive-Timken U-200 Axle
CONDITION Long distance freight haul-road elev. 0 to 7200 ft.-weather-20° to 125° F.
LOCATION Los Angeles-Albuquerque N.M.
FIRM Illinois-California Express Co., L.A.

Hypoid gears in good condition after 332,711 miles!

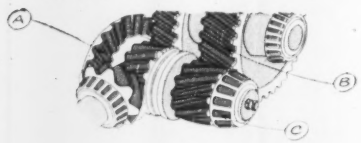


RPM MULTI-SERVICE GEAR LUBRICANT was used exclusively in the final drive from which this hypoid pinion was pulled — 459,981 miles since it was new and 332,711 miles since last overhaul. As photo above indicates, none of the gears in the unit was worn enough to warrant replacement.



ALL PARTS OF THE ASSEMBLY WERE PUT BACK IN SERVICE. Note their excellent condition despite 332,711 miles of highway work in extremes of load and weather conditions. The rear end was only taken down because the truck it was in was temporarily tied up in the shop for engine adjustment and service.

How RPM Multi-Service Gear Lubricant prevents wear in hypoids



A. Contains a special compound that reacts chemically with metal and forms protective lubricating coating . . . resists rubbing action of hypoid gear teeth.

B. Withstands extreme temperatures and pressures . . . highly oxidation resistant —prevents excessive deposit formation.

C. Provides lubricant for integral bearings and other parts. Will not separate. Inhibitors resist rusting and stop foaming in gear cases.

REMARKS: This final drive was in a transport unit hauling average gross loads of 68,000 pounds between Los Angeles and Albuquerque, New Mexico. The route is through desert and mountains from below sea level to 7200 feet. Some grades rise 2000 feet in 10 miles. Weather temperatures range from sub-zero to 125° F. in this area.

The final drive was in service from 13,000 to 14,000 miles per month. The RPM Multi-Service Gear Lubricant was drained and a new fill put in about every 35,000 miles. RPM Multi-Service Gear Lubricant provides longer gear life in all hypoid sets, truck, passenger cars or other installations. It comes in several grades to meet all conditions.

RPM

FOR MORE INFORMATION about this or other petroleum products of any kind, or the name of your nearest distributor handling them, write or call any of the companies listed below.

Trademark "RPM" Reg. U. S. Pat. Off.

STANDARD OIL COMPANY OF CALIFORNIA • San Francisco
THE CALIFORNIA OIL COMPANY • Barber, N. J., Chicago, New Orleans
STANDARD OIL COMPANY OF TEXAS • El Paso, Texas
THE CALIFORNIA COMPANY • Denver, Colorado

THE CONSTRUCTION WEEK

FUTURE OF HOUSING—Korean developments will determine the future of all private building. Housing is an example. Plans developed by the National Security Resources Board for housing in an emergency period fall under seven general heads: (1) Utilization of existing housing; (2) Regulation of private building; (3) Provision of Emergency and mobile housing; (4) Operation of war rental housing; (5) Provision of facilities for community mobilization; (6) Stepped-up research and development in the housing field; and (7) Planning for organization and administration of a wartime housing program.

WHEN IS OLD?—One of the things business and labor must think about, in their consideration of age pension plans is the matter of retirement age. Government labor experts, conscious of the drive for lower retirement ages, see two points, one good, one bad. The good: Calendar age is not always a good criterion—many workers get "old" long before their 65th birthday. Some means of getting these people out to grass would make more room along the line, increase business efficiency. The bad: If you bring your general retirement age too far down—say to 50 or 55—you're offering an out to a lot of people who can still work productively, in effect you are bringing the pension into the field of unemployment insurance. The answer, government men think, lies in a review of pensioning practices; more flexible requirements; probably in better medical and mental examinations and standards.

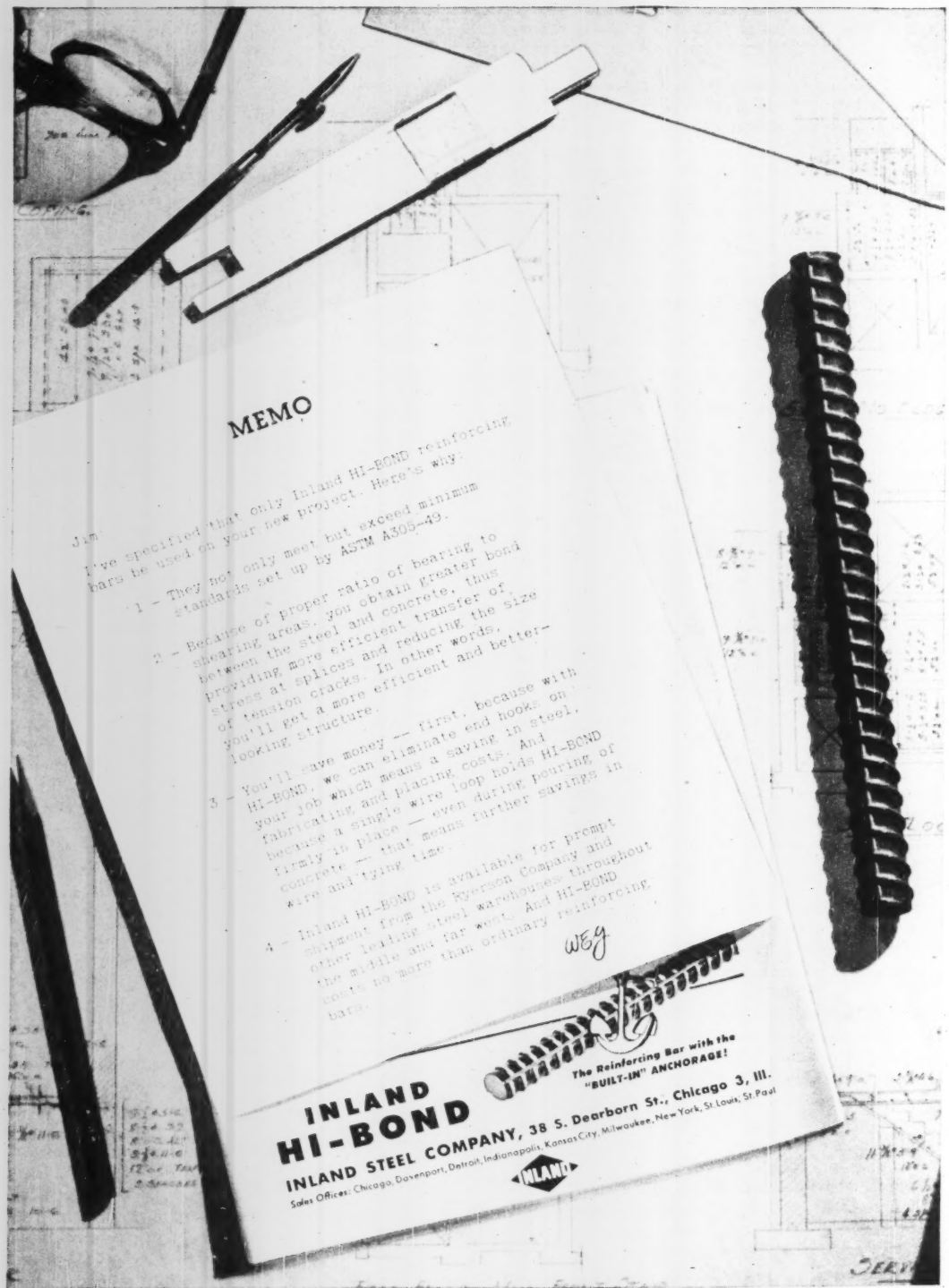
PENSIONS FREEZE LABOR—Coupled with the question of pension programs is another matter—of serious import in an almost-war economy: Vested interests in pension funds have a tendency to freeze labor into current jobs or with current employers—few workers (particularly those with some seniority) will move willingly to another (though possibly more essential) job if they think the move might jeopardize those pension payments. Should the almost-war situation get more serious and government be forced into manpower allocations, pundits think Congress may have to pass laws to do two things: Insure protection of pension and seniority; insure return of the old jobs (much as was done for veterans of WWII) for workers shifted.

MORE POWER TO TVA—TVA's Johnsonville, Tenn., plant will be the world's second largest thermal station (biggest is Consolidated Edison's huge Hudson Ave., New York, plant), now that funds have been provided for units 5 and 6. These two units will bring the plant's capacity to 750,000 kw. Cost of all six units will total $98,000,000, which doesn't sound quite so big when you figure it down to $130 per kw. TVA now has four units under way at Johnsonville; the two new ones are already on the drawing boards. There's plenty of demand for the new supply: Customers such as Alcoa, Reynolds Metals and Monsanto are in fact secondary to the valley's fastest-growing consumer—the A-bomb works at Oak Ridge and the Tullahoma Air Force Enginering Center, now being established on the site of what was Camp Forrest, Tenn. Incidentally, when Johnsonville is complete, TVA expects to operate it at 79% plant factor, (i.e., operate it so as to obtain 79% of what it's capable of producing if it ran all year at full load).

NORTHEAST POWER PROSPECTS DIM—Despite formal support from President Truman (in the form of a message to a Senate subcommittee) the chances for a New York-New England resources survey are considered dim in Washington. Plan was to approve a study that would consider the Northeast area "as a whole" on the basis of its power needs and potential. Incidentally, the bill under consideration by the senators has a "hands off" clause that carefully keeps the study away from the highly controversial St. Lawrence Seaway proposal. However, observers point out that Congress this session has already approved a New England river survey by the Army's Corps of Engineers (as part of the omnibus authorization measure) and many Senators feel that the proposed additional survey would be duplication.

PAVING CONTRACTORS FIGHT—Three lawsuits are coming up in Boston, aimed at recouping city funds which the Finance Commission says were spent improperly on street paving. (ENR June 22, p 30). One contractor had agreed to refund the city $46,000 within 60 days, to forfeit a payment of nearly $9,000 more and to stand the loss of $15,000 for work actually done. He hadn't paid when the 60-day period expired, so is supposed to have decided to face suit. Meanwhile, Fin Com continues its investigations of skimpy paving, has three more reports in prospect.

OVERSIGHT—New Hampshire is acting quickly to correct a situation that arose as soon as its 15-mi coastwise turnpike was open to the public: Motorists expected to find ample rest-rooms at the midway toll station. They had to be content with the lone facility, intended for the collection staff. Construction will start immediately.


MEMO
Jim
I've specified that only Inland HI-BOND reinforcing bars be used on your new project. Here's why:
1 - They not only meet but exceed minimum standards set up by ASTM A305-49.
2 - Because of proper ratio of bearing to shearing areas, you obtain greater bond between the steel and concrete, thus providing more efficient transfer of stress at splices and reducing the size of tension cracks. In other words, you'll get a more efficient and better-looking structure.
3 - You'll save money — first, because with HI-BOND, we can eliminate end hooks on your job which means a saving in steel, fabricating and placing costs. And because a single wire loop holds HI-BOND firmly in place — even during pouring of concrete — that means further savings in wire and tying time.
4 - Inland HI-BOND is available for prompt shipment from the Kyerson Company and other leading steel warehouses throughout the middle and far west. And HI-BOND costs no more than ordinary reinforcing bars.
WEG
INLAND
HI-BOND
The Reinforcing Bar with the "BUILT-IN" ANCHORAGE!
INLAND STEEL COMPANY, 38 S. Dearborn St., Chicago 3, Ill.
Sales Offices: Chicago, Davenport, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul
INLAND

CONSTRUCTION TRENDS

MATERIALS FOR WAR BUILDING

Production of key Construction Materials
(Percent Change from 1939)

	1942	1949
Asphalt prepared roofing	58.8	56.2
Fabricated structural steel	41.7	28.9
Concrete reinforcing bars	44.5	24.1
Brick	—28.3	14.8
Cement	49.5	71.6
Gypsum board	257.4	514.9
Lumber	26.4	11.4
Rigid steel conduit and fittings	88.3	60.8
Structural clay tile	—2.2	24.4
Softwood Plywood	84	86.4
20 materials—average	28.9	32.7

Source: Department of Commerce

When it comes to materials, the construction industry is far better prepared for a rearmament program than it was before World War II.

And, overall, it is better off than in 1942—the industry's peak year of war construction.

This is in spite of today's widespread shortages of materials. Lumber, steel, cement and other materials are short—as ENR has reported. But the shortage is caused by roaring demand—an industry producing at record rates. By the best figures we have, production of construction materials now is much higher than it was before World War II.

The table above gives the story on 10 key building materials. It shows the percent increases in production between 1939 and '42 and between '39 and '49. Overall, the Department of Commerce's index of production of 20 basic materials shows an increase of almost 29% to 1942 and 32.7% to last year. It's a condition which can only be comforting now.

Production of these materials is running higher today. In 1949, with construction slow in the first half year, production of some materials dropped.

By early spring of this year, the Commerce 20 materials index (1939-100) was above 140. It is probably above 150 today.

The average, however, conceals some spectacular changes in individual products. Lumber production in 1949 ran only slightly above its 1939 level. But plywood has jumped 86% by the 1949 figures.

Steel, in the form of fabricated structural shapes or concrete reinforcing bars, is running below its 1942 peaks. But the steel industry's total capacity is well above 1942. If the rearmament program should need industrial and military building on the scale of 1942 again, the steel could be produced.

The roaring postwar boom in housing accounts for some of the major changes in the production figures.

Plywood, asphalt prepared roofing, and gypsum board have all benefited from high-level housing activity. Gypsum board is the most spectacular example. Production has expanded more than five fold in the last ten years. It can be put in place faster than wet plaster and it is cheaper in many applications, contractors have found.

Cement production has risen steadily. During the war, cement block came to be widely used as a back up material. It became popular since it is relatively inexpensive and easy to handle. One result is that it was used to replace structural clay tile. Tile production has increased only 24% in the last decade, significantly behind other materials.

Since the war, cement use in federal dam building programs, and in slowly-growing highway building, has steadily raised production. And it has found more and more use in homebuilding. Result: even with a sharp increase in production, it is short today in numerous locations.

Along with plaster and structural clay tile, brick has fallen behind the parade. Its production is up only slightly over the last ten years. Again substitutes, cinder block and concrete block, along with the high wages of bricklayers, have led to its replacement in numerous applications.

In short, the U. S. has enough capacity to produce construction materials for even an all-out war. With the partial mobilization ordered by President Truman, the industry will be able to handle all defense demands and still have enough capacity to maintain private construction at a high level.

THE U. S. ECONOMY GROWS

While construction has expanded its capacity, business as a whole has leaped ahead. The President's mid-year economic report spells out the expansion. Measured in 1949 prices, the total national output of goods and services grew from $160 billion in 1939 to an annual rate of about $267 billion in June, 1950. Industry contributed a very large share of the increase. (the Federal Reserve Board index of industrial production stood at 199 in June, an astonishing 82% above its 1939 level).

The tremendous increase in our capacity to produce is reflected in a growth, since 1939, of over 35% in civilian employment. Almost 61.5 million persons were working outside the armed forces last June.

Mobilization will put a strong pinch on American industry, but the statistics indicate that defense needs short of war can be met with a minimum of economic confusion if business and government cooperate to get the production out.

LEAKPROOF for LIFE of the LINE

Preassembled at the plant, ready to couple. Self-locking

LOWER IN-DITCH COST

Plain Spigot end of pipe shoves into TYLOX Coupling Joint

Acid and Alkali Resistant—Sewerage and Industrial Waste Resistant

TYLOX . . . Flexible in Angular and Lengthwise Movement

PRODUCTS

Sewer Pipe (Vitrified)	Segment Sewer Block	Stove Pipe
Sewer Pipe (Concrete)	Meter Boxes	Chimney Tops
Liner Plates	Ship-Lap Wall Coping	Chimney Pots
Tylox Gaskets	Septic Tanks	Fire Brick
Aerodrane Filter Block	Drain Tile	Fire Clay
Slipseal Sewer Joint	Flue Lining	

SALES OFFICES:

NEW YORK—3917 LINCOLN BLDG.—60 East 42 Street. Tel. MU 7-7395
BALTIMORE, MD.—HALETHORPE BRANCH—Box 7769, Tel. Elkridge 790
CINCINNATI, OHIO—P.O. NEWTOWN, OHIO—Box 215, Tel. Locust 7846

FACTORIES:

BALTIMORE, MD., CINCINNATI, OHIO, NEW PHILADELPHIA, OHIO, PALMYRA, OHIO (2), UHRICHSVILLE, OHIO (2)

UNIVERSAL SEWER PIPE CORPORATION
UNITED STATES CONCRETE PIPE COMPANY

GENERAL OFFICES • 1500 Union Commerce Building • CLEVELAND 14, OHIO

What Next?

THE WAR IN KOREA is described as a series of holding actions. To fight and fall back is the procedure used. But hold for what? Fall back to where? These are pertinent questions.

They are also applicable to the home front, where in the week following the President's call to military preparedness, business has been holding its former course pending further advice. The President dropped one shoe. Waiting for the other one is, as usual, a trying experience.

In Korea the holding is for the purpose of providing time to build a defense line around a bridgehead, to ready a supply port, and thus prepare for an offensive. We will fall back to this defense line, no farther. That's the plan and the hope. At home there is also a defense line beyond which civilian activity will not be permitted to retreat. Where it is depends upon how much the military will need of manpower and materials. That is the other shoe that the President must drop soon.

In the meantime there is work and planning for engineers and construction men. In Korea our military construction forces are already busy on the defense line and the port. They are planning on bridge and road reconstruction that will be required when we break out of the bridgehead.

At home the exact dimensions of work and planning are not so definite. Yet a course of action is indicated: Keep present jobs going—for a fully occupied economy is essential; plan and bid on new jobs that will increase the nation's power and productivity; be conservative in buying construction materials; keep equipment and supervisory organizations as ready as possible for any contingency. Beyond such steps not much can be done at present, but such a holding action offers a sensible course until the President says what next.

Housing Is Helped

FEW OF THE CONTROLS that are going to be imposed on the economy are going to be welcome, but at least one of them will be beneficial. This is the order requiring higher down-payments on future housing loans—those granted by the Veterans Administration and those insured by the Federal Housing Administration.

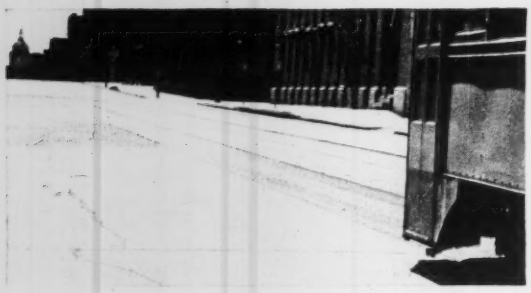
Under the procedure that has been in effect, veterans could get 100% loans, and few others had to pay more than 10% down. It was no wonder that we were experiencing the greatest housing boom in history—and not surprising that many people looked upon it with misgivings. Such slim equity is unhealthy under any circumstances. When it is sponsored by the federal government with the political objective of pleasing voters and keeping business booming for the next elections it is dangerous medicine indeed.

Without the Korean war and the need to conserve all possible materials and manpower, it is questionable whether the administration would have taken any steps to tighten housing credit. The boom could have gone on until the major part of the housing in the country was directly under the control and indirectly under the ownership of the federal government. It is not reasonable to assume that that is what the majority of home owners prefer. Moreover few of them can be very happy over the high cost of their housing, even though present cash outlay is negligible. This high cost, it may be noted, is in no small part due to the fact that the government chose to push house building by artificial devices at a time when there was already full employment at the highest wages in history and no great surplus of material available.

We were well on our way to recording 1,250,000 housing starts in 1950, when the credit order was issued by the President. We may still exceed a million—which would be a record-size year. Probably the U. S. needs to build a million houses annually. But it will be considerably more healthy for the country and for the individual home owner if a reasonable cash payment is made for the privilege of buying or building a house. Tightening credit on home loans is a type of control that is necessary to save materials and manpower for the preparedness effort. But it should have been done even without that incentive.

What Is a Toll Road

WE THOUGHT WE KNEW what a toll road is—a road on which tolls are collected. But the definition is not as simple as that, according to a letter from Joseph Barnett of the Bureau of Public Roads published in last week's issue, p 43. We erred in calling the parkways in Westchester County, New York, and in Connecticut—on which tolls are collected—toll roads. "They are not", says Mr. Barnett. "They were designed and now are operated as free roads except that in each case tolls are collected at one end." As tolls are not collected at the intermediate points of access and exit, Mr. Barnett states that it is possible to drive as much as 27 miles on the Merritt Parkway without paying a toll by entering or leaving before reaching the main toll gate. So these parkways are not toll roads. Later in the same letter Mr. Barnett says: "The ideal toll road is one designed and operated as a free road but on which toll collections can be made anyway." Since we were told earlier that the parkways on which tolls are being collected are not toll roads because they were "designed and now are operated as free roads," we find ourselves a bit confused. We think we will stick to our own definition.



Ten Years Ago...

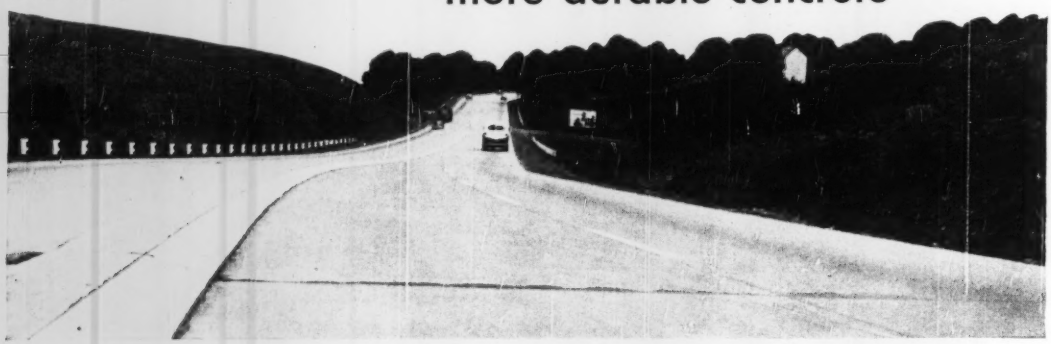
A Decade of ATLAS DURAPLASTIC AIR-ENTRAINING PORTLAND CEMENT

in August, 1939, this concrete test paving was laid in Second Avenue North, Minneapolis. The badly scaled section of roadway in the background was made with regular portland cement. The foreground section, *laid at the same time*, was made with Atlas Duraplastic — the first commercial use of the air-entraining portland cement originated and developed by Universal Atlas.

Both sections, subjected to the severity of ten Minneapolis winters and to heavy applications of de-icing salts, are shown just as they appeared in July, 1949—convincing proof of the characteristic durability of Duraplastic concrete, of its high resistance to freezing-thawing weather and the scaling action of de-icing salts. Longitudinal structural crack shows some ravelling. Note perfect transverse joint.

Today... experience shows ATLAS DURAPLASTIC* does make more durable concrete

Route 19, Washington County, Pa. Concrete for paving, bridges, underpasses made with Atlas Duraplastic cement. White concrete reflecting median divisors made with Atlas White Duraplastic. Designed by Pennsylvania Dept. of Highways. Contractor, Adam Eidemiller, Greensburg, Pa.



Modern highways, such as the one shown here, are a far cry from that first test roadway. By their increasing numbers, they attest to the fact that designers and builders of highways are convinced that Duraplastic *does* make more durable concrete, that it fortifies concrete against freezing and thawing—renders it highly resistant to the scaling action of de-icing salts.

Experience also shows that Duraplastic requires less mixing water for a given slump, that it makes concrete more plastic, more cohesive, more workable, more uniform; that it minimizes segregation and bleeding. And that concrete made with Duraplastic air-entraining cement dumps and screeds easily, permits finishing closer to paver, allows earlier protection for curing.

For pavement needs of today and tomorrow, Duraplastic offers *better concrete at no extra cost*. It provides the precise amount of air-entraining agent interground with the cement for satisfactory field performance. It complies with ASTM and Federal Specifications; sells at the same price as regular cement; and calls for no unusual changes in procedure. For further information write to Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, New York.

OFFICES: Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.

*"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

ESB-D-49

ATLAS DURAPLASTIC

TRADE MARK REG. U. A. C. CO.

AIR-ENTRAINING PORTLAND CEMENT

MAKES BETTER CONCRETE AT NO EXTRA COST

NBC SUMMER SYMPHONY CONCERTS—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—June to September*

ENGINEERING NEWS-RECORD

AUGUST 3, 1950 VOL. 145 NO. 5

Steel supply is key problem in construction changeover

ENR survey shows military needs are expected to total about 7,500,000 tons, including that for arming allies—Impact of cutbacks seen arriving soon

ENR Staff Report

What will be done about steel—How much of it is there, how much is needed in the U. S. attempt to put itself on a war footing? That was the prime consideration before the nation, and particularly the construction industry last week.

Two things had to be decided:

1. How much steel would the military and the general effort toward defense need?

2. What would happen to the civilian uses of the remaining steel?

And from these two questions stemmed apparently inevitable actions: Priorities, allocations, probably price controls.

• **Add it up**—The arithmetic of the problem was almost too simple. The nation's steel mills today are running at as close to 100% of capacity as they can come—something like 100 million ingot tons yearly, about 75,000,000 tons of finished product. Any subtraction from 100% would leave the nation that much short of filling its present demand for steel.

The best estimates Washington had as to what the military would need in the way of steel was about 5,000,000 tons—most of it in "hardware" (tanks, guns, ammunition, trucks, equipment), almost none of it for construction purposes. To this could be added about 2,500,000 tons to take care of committments to Atlantic Pact Allies and others—a total of probably 7,500,000 tons, roughly 8½% of the total national capacity.

• **Probably soon**—And there was one factor for careful consideration by construction men: How soon would the effect of the steel withdrawals for military purposes hit? Most observers thought the impact would be immediate—some even talked of controls of some kind within a month.

Against this, however, were a number of factors: Cutbacks in credit (as on housing) would have some effect on the current roaring demand for steel; the review that President Truman asked of federal construction would also have an effect; a lot of the steel for current jobs already is in stock or being milled or fabricated and also, the President continued to show his reluctance toward imposing any drastic controls until the coming Congressional elections.

Best guess as to the outcome seemed to be thus, however: Some kind of control—probably voluntary—would be in effect shortly. Others would follow as needed.

• **The construction stake**—For construction, as the nation's second largest individual steel user (automobiles are first) the decisions on all these questions will be of paramount importance.

The industry will use about 9,000,000 of the 75,000,000 tons of finished steel turned out this record-breaking year.

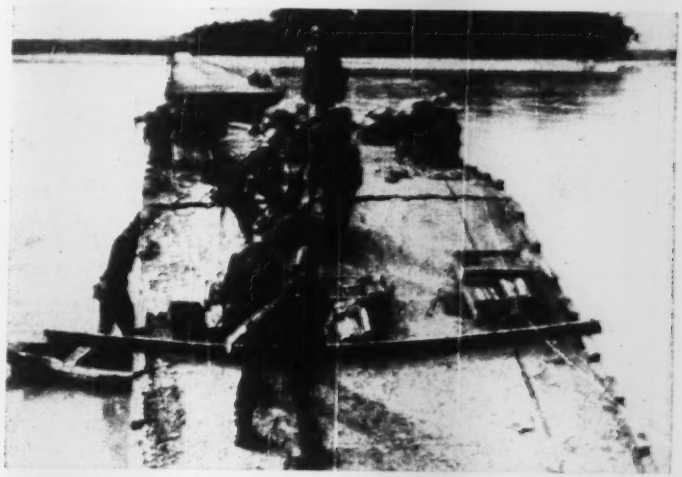
In that figure will be included the ton required for John Doe's $8,000 house, the 13,000 tons in the United Nations Building, the 8,000 tons that will go into the York River Bridge, in Virginia, and the more than 500,000 tons ordered for the 1,840-mi gas pipeline from Texas to New York—and myriad jobs large and small.

Thus construction—with the automotive industry (which includes the suppliers of much construction equipment)—is at the head of the line when it comes to finding candidates to give up steel to the military.

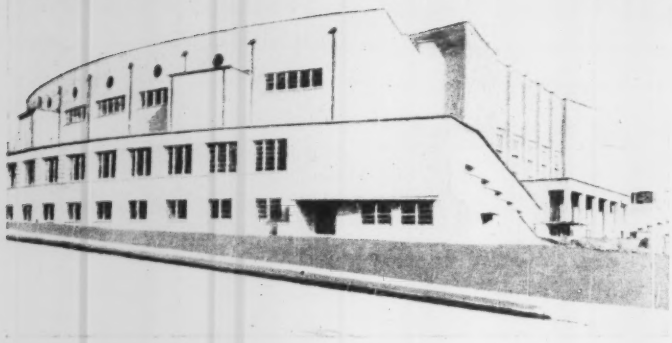
If a 10% diversion, for example, were to be applied across the board, construction would stand to lose 900,000 tons of its steel. It may be hit even harder than that. And for the immediate future, there is no prospect of any war construction to offset the loss.

Other savings could be made, if the basis were arbitrary enough: If automobile production were cut back from an estimated 7,000,000 to 5,000,000 units, something over 2,000,000 tons of steel could be saved. But the problem of cutting back smaller steel users by any logical step appear at first glance to be insurmountable.

(Continued on page 24)



BUILD 'EM AND BUST 'EM—U. S. Engineer troops in Korea are shown placing demolition charges at the end of a partly damaged bridge preparatory to blowing it in the face of advancing North Korean tank columns. (Wide World Photo)



IN MEMORIAM—University of Kentucky has dedicated this $4,000,000 Memorial Coliseum to the memory of 9,265 Kentuckians killed in the last war. The yellow-brick structure will seat 12,000 for basketball, has a 75-ft swimming pool. Ceiling is 49 ft above the main playing floor. Its main trusses have a 225-ft span. Roof area of 2.3 acres encloses more than 6,000,000 cu ft. John T. Gillig, Lexington, was architect. Associated with him were Ernst V. Johnson and Hugh Merriwether, both of Lexington. Struck Construction Co., Louisville, was general contractor.

Steel is key construction problem

(*Continued from page 23*)

• **What to cut?**—What types of construction are likely to have to give up steel? Housing comes first, since Mr. Truman mentioned it specifically in his orders tightening housing credit. The U. S. was well on its way to building more than a million units this year. If that dropped to 750,000 in 1951 the resulting steel saving (figuring slightly more than a ton to the average house, including nails, hardware, fittings, pipe etc.) would be about 500,000 tons.

Gas pipelines are big users of steel. They have been booming in a way that makes cutbacks seem possible. A single gas line may take from 50,000 to 200,000 tons of steel a year. Dropping one or two of these would make a sizeable saving. Commercial buildings and big bridges may also face a cutback.

Although Washington opinion held that private construction will feel the heaviest end of the cutback stick, there was some further indication of a drop in federal work. As this week started, officials thought that the government's agencies could shave off perhaps 10% of the current fiscal year's $3-billion construction program. That also would save steel. Local public works might yield comparable savings.

• **Proper perspective**—The factor of perspective shouldn't be overlooked by the construction industry, as it contemplates these possible or probable cuts:

The cuts will be made off the top of a construction industry that is in the middle of the biggest boom in its history. Even with the cutbacks detailed above, there will be a lot of construction left, by any standards.

One other point is that the steel industry itself has been moving to meet the emergency. It is now planning a 2.5-year program that will up its production capacity by about 6,363,000 tons. That tonnage (though it will take some steel out of the market for the added plant—it takes one ton of steel to build up five tons of added capacity) will be coming in gradually over the two year period, and may do quite a bit to offset the draw to the military—if nothing more drastic occurs on the war front itself.

• **What about it?**—The answer—in spite of reluctance on the part of both the Administration and the steel industry—inevitably appeared to be controls of some kind.

Most steelmen (and many of government employees) shuddered at the thought of priorities alone—they remembered too well that in War II, priorities soon became high-class hunting licenses and little else.

But they agreed that in spite of this, controls would come fast, and the best opinion was that they would come in about this order: Voluntary allocations, priorities, then something approaching the Controlled Materials Plan that was instituted in 1943.

By voluntary allocation, the steelmen meant a situation where the companies—with government sanction to protect them from anti-trust action—would meet government's needs first. This would bring with it an inherently dangerous thing: Under that kind of an arrangement, the remaining steel would either have to be rationed by the manufacturers, or go uncontrolled into a steel-hungry and heavy-pursed-market.

So the next step would appear to be priorities that would attempt to assign order of precedence to and a limit upon civilian projects for obtaining their share of the remaining steel.

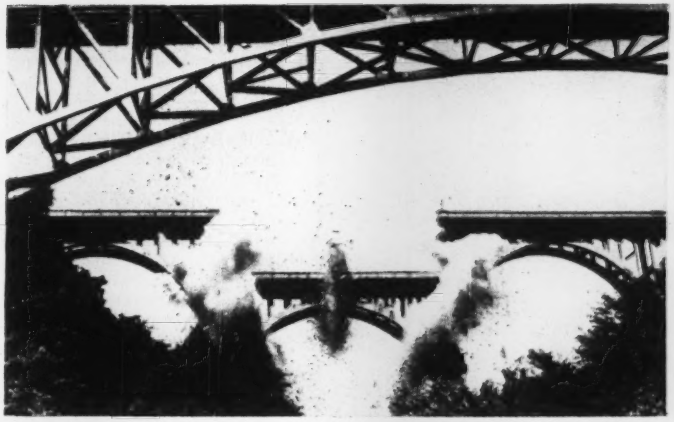
• **Steel wants U. S. controls**—And finally—the steelmen frankly hope—will come some kind of a controlled Materials Plan that would work something like this: A Government would figure out (say for a tank) the exact quantities of various kinds of steel needed to produce a certain order. The manufacturers then could order—on a priority basis—for that job alone. Steelmen think that such a system would be an effective stopper on a customer's continuing to order steel after his priority job is completed—and then turning the surplus steel he gets into the black market.

• **Foreign supply dubious**—There's another question on controls—the matter of staff. Steelmen don't want to be put into the position of having to police their customers, don't think they could do it effectively. And they think the government—through the Department of Commerce, or some sort of a WPB setup—would need a staff of thousands to cope with such policing.

Steel makers were inclined to be dubious, too, about the value of any steel capacity in Western Germany or Japan as applied to construction. They pointed out that most European steels, for example, do not meet U. S. specifications. And one added that Japanese steel makers are now in the U. S. seeking to buy steel for use in battleship repair work for the U. S. Navy in Japanese waters.

However, Germany's present estimated capacity of 14,500,000 tons yearly, and Japan's estimated 15,000,000 tons annually might possibly be of some value for purely military production. How much of their capacity these areas can devote to such work, however, is a large question mark at the moment.

For construction, one statistic can't be arrived at exactly—the capacity of fabricators. But the steel industry feels that, if need be, the fabricators could probably handle 50% more work than they are now handling—depending largely on the type of fabrication.



GROUND FLOOR NEXT—Dynamite cuts down the center span of the high-level concrete bridge between Akron and Cuyahoga Falls, O. The blast is seen through the arch of a new bridge which replaced the old structure. (ENR Aug. 25, 1949, p. 18). (Wide World Photo)

CIO, AFL join New England opposition to federal hydroelectric development

Water Resources Policy Commission holds hearings at Springfield, Mass., and Columbus, O.—Local responsibility stressed at each

Hydroelectric power development was a principal topic as the President's Temporary Water Resources Policy Commission held an open hearing at Springfield, Mass., July 25. The issue received considerable impetus from federal pronouncements over the past year looking to vast power development by federal agencies on New England streams.

Strong opposition from privately owned electric utilities was a foregone conclusion. More significant was the opposition expressed at Springfield by labor organizations, representing both the AFL and the CIO.

• **Non-preferential distribution**—Labor representatives asserted that even though the United States might develop power in connection with flood control works, existing power companies should be given an opportunity to transmit and distribute the energy without discrimination in favor of publicly owned distribution systems. Labor spokesmen emphasized that unions had suffered, not only in wages but in other collective bargaining where public ownership displaced private utilities.

Both the International Brotherhood of Electrical Workers, AFL, and the Utility Workers Union, CIO, have approved resolutions to this effect within the last year.

Utility men and the New England Council attacked federal power development in the area. They emphasized that the area has a 23% reserve capacity margin in existence now, and that the area is strongly interconnected with New York state and other eastern systems. They also attacked a Federal Power Commission report which asserted that New England has a feasible hydroelectric potential of 3,000,000 kw.

• **Dever wants U. S. power**—Massachusetts' Governor Dever favored broad federal hydro development in the region. He declared existing power rates are too high, and constitute a threat to the region's industrial expansion. Labor spokesmen asserted that if rates be too high, the fault lies with utility regulatory commissions—generally appointed by state governors.

Beyond the power debate, division of opinion developed on whether federal aid should be made available for anti-pollution work. In part, it was argued at some length that flood control and pollution abatement could be carried on more effectively through interstate compacts than with federal financial assistance.

• **Local responsibility**—A day earlier, the commission conducted a similar hearing at Columbus, O., where representatives of 10 midwestern states were heard. It, too, was devoted largely to the advisability of federal participation in water development projects, although power was not the issue.

Edward J. Cleary, executive director of the Ohio River Valley Water Sanitation Commission, recommended that the policy commission support a federal campaign against industrial pollution of rivers. ORVWSC, Cleary said, also supports modifications of the federal income tax laws which would help industrial companies amortize the cost of waste treatment plants at a rate substantially faster than would now be allowed.

C. I. Weaver, president of the Ohio Chamber of Commerce, urged the commission to recommend that uniform standards be applied throughout the country in considering feasibility of water projects. Federal participation in such projects should come, he said, only when a national necessity for them has been thoroughly established and when they can be demonstrated thoroughly sound.

R. A. Harner, managing director of eastern Pennsylvania's Lehigh Valley Flood Control Council, urged that local self-reliance be developed, and federal control of flood protection limited to cases where it is imperative.

Two officials of local water development projects urged the commission to study their works. M. V. Kyler, vice president of the Wisconsin Valley Improvement Company, cited the WVIC project as an example of what can be done in water development without federal participation. A. W. Marion, director of the Ohio Water Resources Board, opposed developments far from population centers, and suggested instead that a pattern similar to Ohio's conservancy district plan be adopted, with local responsibility emphasized.

WPI civil engineers test paving for Worcester

Worcester, Mass., is finding out whether it has been getting its money's worth on street contracts since War II.

Four Worcester Polytechnic Institute senior civil engineers, under the direction of Prof. Frederick L. Sauger, have been engaged by the city's new manager, E. F. Merrill, to make bituminous-concrete and subgrade tests of the new streets.

The study is being made to check citizens' charges of faulty construction. With the aid of a city laborer and air compressor the group cuts foot-square concrete samples and analyzes them with reference to the construction specifications.

The group expects to test 300 samples in about ten miles of street. It is not known whether the report will be made public.

Niagara Water Treaty moves up in Senate

Committee reports favorably on plan to let Congress decide who shall redevelop hydroelectric power there

Redevelopment of Niagara Falls power by public investment has been given a boost by the Senate Foreign Relations Committee.

The committee July 25 unanimously approved the new Niagara Water Treaty with Canada, but the measure to ratify the treaty was amended to give Congress alone the authority to say who shall redevelop the power. This rider would prevent the Federal Power Commission from exercising its licensing authority.

The amended ratification measure is expected to get the required two-thirds vote of approval from the Senate either at this session or early in the next Congress.

• **Public power likely**—When the treaty has been approved, redevelopment of Niagara Falls power now is considered likely to be authorized by Congress along the lines of a bill introduced this year by Democratic Senator Herbert H. Lehman of New York, and Representative Franklin D. Roosevelt Jr. Here's the way the Lehman-Roosevelt proposal would work.

The Corps of Engineers would construct the new power facilities as a federal project. Then, the New York state, probably through its Power Authority, would take over, operating the project and repaying the federal construction costs. Niagara Mohawk Power Co., which controls present power at the Falls and has sought to redevelop Niagara power as a private project, would distribute much of the power, authority officials have indicated.

This scheme requires legislation by the New York state authorizing either the Power Authority or some other body to operate at Niagara, in addition to Senate ratification of the treaty and Congressional approval of the construction and operation plan.

• **Korea helped treaty**—Both Senate committee action and improved prospects for redevelopment of power are attributed to the international situation.

Redevelopment of Niagara power would up present capacity of 440,000 kw at the falls to 1,572,000 kw, under proposals contained in a report published last fall by the Federal Power Commission.

Advocates of the redevelopment say that the dainless hydroelectric project could begin producing power within two years after construction started.

NEEDED: ONE NEW BOOM—This crane was attempting to lift a load of steel beams to the roof of a Dallas, Tex., garage when it was upended. The boom bent when it hit the parapet. Another crane lowered the beams back to the street. (Wide World Photo)

N. Y truckers end strike tying up building work

Ending a nine-day strike that had already resulted in layoff of an estimated 160,000 construction workers in the metropolitan area, New York area sand, stone, and gravel truck drivers gained substantial pay raises and other contractual benefits last week.

The drivers—1,100 members of local 282 of the AFL's teamsters' union—were granted direct wage increases that amounted to $3.08 per day (bringing them up to an even $16 a day). Additionally, they got an employer-paid hospitalization plan covering drivers and their families, that will add an extra "fringe issue" payment to the wage bill estimated to cost employers an additional 30 cents a day.

The drivers' strike, directed against the sixty major sand and gravel companies in outlying areas of the city and in Long Island's Nassau and Suffolk counties, caused delays to a number of major construction projects in the city, including the United Nations buildings, the Port of New York Authority's huge bus terminal, and the cross-Bronx Expressway and numerous large housing projects.

Settlement was expected to speed negotiations between teamster strikers and about 80 smaller companies that transport plaster, lime, gypsum block and other construction materials. It was reported that the smaller companies had already offered their drivers a $1.65 per day wage boost under a new contract.

Meanwhile, one other building trades strike continued in New York—a two-week tie up in plumbing and steamfitting work, over working conditions. The AFL plumbers, steamfitters and pipe workers local was one of the very few building trades unions that did not sign recent industry-wide no-strike agreements with the city's building trades employers (ENR July 6, p. 28).

Heavy trucks dodge cops; smash undersize bridges

Heavily loaded trucks are taking to the back roads—with disastrous results to undersize and understrength bridges which were never designed for main route vehicles or loads.

In Pennsylvania, a truck driver wheeled his big tractor-trailer along a highway near Harrisburg. With its load of canned eggs, it weighed 25 tons. The driver knew a police inspection point lay not too far ahead. He knew, too, that a fine would cost him $50. As driver-owner, decision was entirely in his hands. He pulled off onto the back roads to dodge the check-point.

Near Hummelstown, he came to a bridge with a three-ton limit. Again he decided to gamble. He edged his big truck forward, and the tractor cleared the far end safely with the trailer almost across.

Then it happened. With a sound like "crashing thunder" the bridge went down. The trailer ended up with its rear wheels firmly in Beaver Creek. Canned eggs lay scattered about the road and creek bed.

In Indiana, two Gary truck drivers ran into similar trouble. They took to the back roads to avoid the truck inspection point set up by the state police. And for good reason, they thought, for each truck carried a 35-ton load of steel well beyond legal limits.

They came back to Buck Creek, and passed over the county bridge. The load proved too much for the structure, and a few moments later it collapsed.

The drivers were fined $75 and costs. Meanwhile, Tipton County is minus its bridge.

In Michigan, replacement of the Tone Drum bridge near Sherwood will cost $60,000. The bridge collapsed under the weight of a truck tractor pulling two trailers loaded with 25 tons of sheet metal. Work will start next month.

CONSTRUCTION BUSINESS

Prices of heavy materials rise in some cities; lumber up at mills

Some materials prices are inching up here and there, while the bad actors—lumber and plywood—are up everywhere because of mill increases. Only asphalt paving materials buck the slow upward trend that started this spring.

Here are recent price changes on some important heavy construction materials:

• **Cement and aggregates**—Cement prices are generally stable, but shortages mean paying freight expense from distant mills. Minneapolis price is up 10 cents a bbl to $3.17 fob city.

Crushed stone in Detroit is up 25-35 cents a ton to $3.25-$3.50. Crushed slag in Philadelphia is up 25 cents on 1½-in to $1.75 a ton; ¾-in is up 15 cents to $1.55.

• **Ready-mix**—Ready mixed concrete is going up in many cities: up 50 cents a cu yd to $10.20 in Chicago; up 45 cents to $12.35 in Cleveland; up 40 cents to $10.50 in Minneapolis; up 50 cents to $11.00 in New York; up 45 cents to $11.15 in Philadelphia; up 60 cents to $10.70 in San Francisco.

• **Brick**—Brick price increases are: Baltimore, common backing up $1 a thousand to $34, straight hard up $1 to $40; Cincinnati, common backing up $2 to $34.50; Denver, straight hard up $6 to $38; Philadelphia, common up $2 to $29, straight hard up $2 to $32.

• **Sewer pipe**—Sewer pipe, along with various clay products, has been going up a bit at a time in many cities, mostly because of wage increases, plus terrific demand for the product. Recent hikes: Vitrified—Cincinnati, up 7-92 cents a foot (depending on size) to $0.476 for 8-in, $10.25 for 36-in; Cleveland, up 3-41 cents a foot to $0.406 on 8-in, $9.12 on 36-in; Baltimore, 12-in up 9½ cents to $0.5775 a ft. Concrete sewer pipe—Baltimore, up 6 cents on 12-in to $0.85 a ft, up 10 cents on 24-in to $2.35; Detroit, up 10 cents on 12-in to $0.65 a ft, up 50 cents on 24-in to $3.00.

• **Steel**—Steel shapes and bars at the warehouse are still holding fairly steady, after the general 20-cent (a cwt) rise in May. But shortages are getting serious, as with cement and some other materials. At Philadelphia, shapes are now up 20 cents to $5.45 a cwt, bars up 10 cents to $5.60. In Boston, expanded metal lath is up $1 per 100 sq yds to $32 for diamond mesh, up $1.50 to $35.50 on ribbed (fob city).

• **Iron pipe**—Prices of cast iron pipe are firming, especially in the northeastern states. Warren Foundry & Pipe Co. upped its official prices $5 a ton July 14. Other companies have also raised their bids by as much as $3-$4 a ton, but they have not changed official quotations.

• **Lumber jumps again**—Mill price on Douglas fir bounced up $3-5 a M to around $80-$81 last week. This is despite Weyerhaueser's return to the market after a 2-month strike that cut industry capacity 5-10%. Price rise followed higher log prices, due to bigger lumber demand. Further upward pressure stems from combination of normal seasonal peak in building, plus the Korea fright. Mobilization is causing slower deliveries because of rail car and ship shortages, heavy orders for inventories, and rumored government orders—one order by Corps of Engineers for 6 million ft (3-4 days' output at current rate.).

• **Plywood jumps twice**—Plywood prices last week took their second 5% rise since mid-June. Quarter-inch interior grade fir is now about $92 a M sq ft at the mills; ⅝-in special concrete forms are $187.

• **Paving price down**—Paving materials are down in Philadelphia. Latest quotes (tank car lots) are: paving asphalt down $2.50 from a month ago to $20.50; asphalt binders, fluxes down $2.50 to $19.50 a ton; and cutback asphalt off a cent a gallon to 8½ cents.

Military construction grows slowly at first

Military public works construction in the current fiscal year will probably come to something over $200 million, according to Washington observers. Whatever the final figure is it will not be very much more than last year's $180 million.

So cutbacks in prospect for private and civil public works construction are not based on any immediate need for military building.

Greatest impact of defense preparations and the Korea war on domestic construction is likely on supply of basic materials—most of all steel, needed for military hardware, tanks, ships. Also, heavy construction equipment will eventually be needed.

New equipment is needed first to step up military construction preparedness. The President's supplemental military budget message to Congress asks $329,115,000 for the Army Corps of Engineers. Most of this will go to equipping the Corps and preparing it for later needs.

But even a modest military construction speed-up will have some effect on supply of materials and equipment—already short in some items. Voluntary allocations by manufacturers will give preference to defense jobs for materials. And the military will get priority on tractors, trucks, cranes to build up its stocks.

So far, the only military construction projects publicly announced for the current fiscal year are covered in the omnibus money bill now before Congress. Construction finally voted in this bill will come close to the President's request: $95 million for the Corps of Engineers and $63 million Bureau of Yards and Docks.

Construction cost up 1.7% this month

Labor costs, lumber prices raise ENR Construction Cost Index 9 points to 520.66 (1913=100)

The ENR Construction Cost Index is up 1.7% to 520.66 for August, and the Building Cost Index is up 1.5% to 382.42 (1913 = 100).

These increases are about the same as May-June, but more than the 1% rise June-July. Further rises in labor and lumber costs are responsible.

The 20-cities average cost of common labor is up 2.3 cents an hour to $1.561. Skilled labor is up 2.0 cents to an average of $2.544 an hour. Average lumber price (fob city) in 20 cities is up $3.76 a M from a month ago to $97.04. It is up about $19 a M or 25% since January 1.

But steel and cement prices hold steady. The problem with them is local shortage or slow delivery. At the mill, structural steel still averages $3.40 a cwt. (Prices at 3 mills are the basis of the steel component in the ENR cost indexes.) At the warehouse structural steel shapes average $5.62 (fob), up only one cent from a month ago and 31 cents or 4% from January 1. Cement prices in 20 cities average $2.98 a bbl (fob city), 1 cent over a month ago and 2 cents over January 1.

Employment sets record

Contract construction employment in June set a postwar record of 2,397,000, according to Bureau of Labor Statistics estimates.

Number of workers is 9% over a year ago. May-June increase is 7%.

The June employment rise of 163,000 workers compares with last year's seasonal May-June increase of only 68,000 workers employed.

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 71, went to press).

Gas Pipeline—1,130 miles of natural gas pipe lines in Texas, Louisiana and Mississippi are planned by United Gas Pipe Line Co., Shreveport, La., at an estimated cost of $110 million.

Homes—Houston Private Homes Corp. plans to build 3,000 low-cost frame homes on 1,000-acre tract at Ralston & Garrett Rds, Houston, Texas, at a cost of $13,000,000. Paul Wolf, is consultant.

Waterworks—Damming of Buck river and Foster Creek, construction of diversion canal and waterworks tunnel are planned by the Commissioners of Public Works, Charleston, S. C., to cost an estimated $6,900,000. E. B. McDowell, Jr., Charleston, is engineer.

Subway Tunnel—Board of Transportation, New York City, extended bid date to August 18 on construction of 60th St. tunnel connecting to IND Div. subway, Long Island City. Estimated cost is $10,000,000.

VA Hospital—U. S. Engineers, Pittsburgh, Pa., and not the Veterans Administration, as reported 7/20 ENR, will open bids August 15, for constructing a $13,000,000 medical hospital in Pittsburgh.

Hospital—Contract for Veterans Administration hospital in Oklahoma City, Okla., was awarded to Robert E. McKee, General Contractors, Inc., Dallas, on low bid of $7,024,000.

Chemical Plant—Mathieson Hydrocarbon Chemical Corp., Baltimore, Md., awarded contract for a $13,000,000 plant at Doc Run, near Brandenburg, Ky., to E. B. Badger & Sons Co. of Boston. Stone & Webster Engineering Co., consultants.

Highways—New York Department of Public Works awarded contracts totalling $5,274,985 for highways and grade eliminations. The largest contract, $3,163,476, went to Poirot and McLane Corp., New York City, for Highbridge Traffic Interchange, Cross Bronx Expressway. Zara Contr. Co., Hewlett, Long Island, won access roads and grade elimination structures on Sagtikos State Parkway, Long Island, for $1,581,183, and E. G. DeLu & Sons Constr. Co., New Hartford, N. Y., won concrete paving of Route 162 near Rural Grove for $330,326.

Residence Units—Family residence units costing approximately $5,000,000 will be built by the owner, Ernest Anders, Jacksonville, Fla. in the new Beach Boulevard area adjoining Southside Estates, Jacksonville. Reynolds, Smith and Hills are architects.

Gas Lines—El Paso, Tex., Natural Gas Co. will construct 6 branch natural gas lines for total 175 miles in Flagstaff, Ariz., area for approximately $1,750,000.

Hospital—The 450-bed addition to the Miami Valley Hospital, Dayton, O., was awarded to the Maxon Constr. Co., Dayton, on basis of fee covering overhead and supervisory expenses. Approximate cost is $4,500,000.

Low-Cost Homes—1,000 low-cost frame homes with concrete post foundations will be built on 250-acre tract in Fontaine Pl. on Langley Rd. near Superhighway No. 59, North Houston, Tex., by Lawrence O'Donnell & Assoc. Project to cost $4,500,000.

Housing Project—Baccoo Corp., Ft. Worth, Tex., sponsors, will build 600 rental housing units for Carswell Air Force Base for $5,045,380, in Ft. Worth. Jim D. Vowell is architect and Carter & Burgess are engineers, both of Ft. Worth.

Hospital—Euclid Grenville Hospital, Cleveland, O., extended bids to August 16 on construction of $3,000,000, 172-bed hospital at Lakeshore Drive and E. 185th St., Euclid. Conrad Hixes, Simpson & Ruth are architects; J. E. Fierbaugh, engineer.

Highway—C. J. Langenfelder & Son, Inc., Baltimore, Md., was low bidder at $2,449,711 on construction of divided concrete pavement on Route 119, Greensburg City, Hempfield and Unity Townships, Pa.

Water Plant—City of Dallas, Tex., received low bid on 45 mg mixing and settling basins and 20-mg clear water wells near Carrollton, Tex., from W. G. Cullum & Co. and White Constr. Co., Dallas, at $2,563,509.

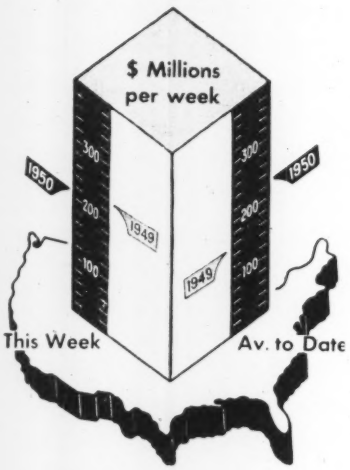
Vocational School—Bergen Co. Board of Education, N. J., asks bids August 31 for vocational school in Hackensack to cost approximately $2,000,000.

Sewage Plant Improvements—City of Cleveland, O., awarded contract on sewage treatment plant improvements to Hunkin-Conkey Const. Co. at $2,250,000. Havens and Emerson are consulting engineers; J. C. Wenrick, engineer.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Aug.'50	520.60	259.25
Building Cost	Aug.'50	382.36	206.69
Volume	July'50	495	247



Activity This Week

As reported to ENR (in millions of dollars)

Amount of contracts let

	Week of Aug. 3 1950	Cumulative 1950 (31 wks.)	Cumulative 1949 (31 wks.)	% chge
Federal	$20.7	$852.0	$688.0	+24
State & Mun.	72.6	2,147.7	1,896.4	+13
Total Public	$93.2	$2,999.7	$2,584.4	+16
Total Private	116.0	4,049.7	2,214.2	+83
U. S. Total	$209.2	$7,049.4	$4,798.6	+47

Contracts by type of work

	This Week	Cumulative 1950 (31 wks.)	Cumulative 1949 (31 wks.)	% chge
Waterworks	$2.7	$134.0	$141.4	-5
Sewerage	4.0	152.3	148.7	+2
Bridges	4.9	231.4	193.9	+19
Highways	29.2	784.6	550.0	+43
Earthwork				
Waterways	4.8	300.2	322.5	-19
Buildings				
Public	38.1	1,004.2	726.4	+38
Housing, pub.	8.1	160.0	250.4	-36
Houses, priv.	57.2	2,216.9	1,014.4	+119
Industrial	27.9	714.9	612.8	+17
Commercial	25.3	577.3	415.6	+39
Unclassified	13.6	573.7	414.4	+38

NOTE: Minimum size projects included are: Waterworks and waterways projects, $25,000; other public works, $500,000; industrial buildings, $500,000; other buildings, $250,000.

New capital for construction

	Cumulative 1950 (31 wks.)	Cumulative 1949 (31 wks.)	% chge
Corporate Securities	$1,336.0	$1,526.0	-12
State and Municipal:			
Excl. Housing	1,301.0	1,235.2	+5
Housing	443.0	458.5	-3
Total Capital	$3,080.0	$3,219.7	-4

Report refutes plan to dam Hudson for permanent New York water supply

Board of Water Supply tells mayor Hudson is out while pure upland sources remain—Hudson project cost would be 5 times Delaware

In a terse and definitive report presented to Mayor William O'Dwyer last week, New York City's Board of Water Supply gave its answer to the question: Why not dam the Hudson for permanent water supply? The answer: It won't work.

The report resulted from a study undertaken by request of the Mayor to determine practicality of a scheme proposed last Feb. 15 by Lawrence F. Beck with backing of the Citizens Budget Commission, of which he is a trustee. (ENR Feb 23, p 29).

(The Citizens Budget Commission, in turn, labelled the BWS report on the Beck scheme as "neither impartial nor objective.")

• **Quality**—BWS calls quality paramount. Branding the Hudson an "open running sewer," the report points out that the city's present pumping project, under construction to take 100 mgd from the river in times of "dire emergency" is but a temporary installation, doomed by agreement with the State Water Power and Control Board to be dismantled upon completion of Delaware System Stages 1 and 2, due in 1956.

Frank A. Marston, consultant with Metcalf & Eddy, Boston, is quoted in the report as claiming it "contrary to present-day sanitary engineering concepts . . . to take water from a stream polluted by sewage . . . when a much better and safer upland water source is available." Even with the most complete available treatment, Hudson River water would be hard, contain phenol tastes and odors, possibly carry disease-producing organisms and be cursed by the stigma of adverse public opinion, according to the report's quote from Marston.

Further, on quality, the report points to comparative analyses of Delaware and Hudson waters by the city's Dept. of Water Supply, Gas and Electricity. Benjamin C. Nesin, director of the department's laboratories, is quoted as saying the Hudson does not meet public health standards for safety.

By contrast, the board points up its consultant's favorable findings on the quality of water in the Delaware River's West Branch. There it hopes to develop Stage 3 (ENR Feb 2, p 30) to fill out remaining capacity of the Delaware Aqueduct. (Reservoirs of Stages 1 and 2 will put 540 mgd through the tunnel, leaving room for 360 mgd more which BWS wants to bring from the proposed Cannonsville reservoir.)

• **Cost**—Mr. Beck's "barrage-type" dam, proposed to cut off the river's salinity by creating a 3-ft head above mhw, would not cost $200 million, as advertised, says BWS.

Rather, the first cost—construction, lands and damages—is estimated at $629 million. About $300 million of this is calculated by George A. Noren, chief engineer of the New York Central Railroad, as the cost of raising his company's tracks, ignoring loss of business due to delays during course of the work.

Another $150 million in damages, not included in Beck's estimate but considered by BWS, is anticipated from various industries and cities whose sewers might react to the proposed rise in the river level.

Operating costs per million gallons are listed in the report as 10 to 1 against damming, pumping and treating Hudson water. BWS estimates the Beck plan might cost $6,000,000 (from tax levy) each year, against $394,950 per year, the operating cost of Stage 3 based on known Catskill and Croton operational expenses.

Adding capitalization to first and operating costs, BWS comes up with $1.17 billion for the Beck scheme and $237.4 million final cost of Cannonsville—about a 5 to 1 ratio.

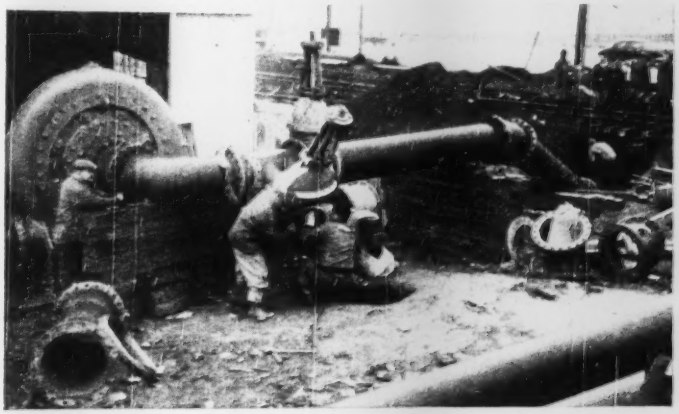
• **Navigation**—Beck has locks in his proposed dam, and at one time he indicated he expected Corps of Engineer sanction of the structure as no hindrance to navigation. However, approval has not been given, and BWS reports that the Maritime Association will oppose any request submitted for approval to dam the Hudson, because of traffic difficulties any such project would involve.

• **Hudson eventual source?**—Attached to the BWS commissioners' letter to the mayor went the findings of their board of consultants on new sources—Roger Armstrong, Tobias Hochherner and Russell Suter.

These consultants assert in their report that when and if it becomes necessary to draw upon the Hudson, it will probably be done according to past proposals. (Two studies have been made in the past half-century—the Burr-Herring-Freeman commission's in 1903 and that by W. E. Spear in 1923.) A pumping station would be put above Poughkeepsie to raise water so that it would flow by gravity to Kensico Reservoir through a new aqueduct, with purification at a plant en route. Storage reservoirs would probably be needed in the Adirondack region to increase low flow, keeping salt intrusion from reaching the pumps.

But for now, state the consultants, storage at Cannonsville is the answer.

For the future, it may be the recently named panel of outside experts (ENR May 25, p 27) that will settle New York's water policy. The group—W. W. Horner, L. R. Howson, Samuel B. Morris, Thorndike Saville and Abel Wolman—should report by November on a survey now under way.



EXPANDING AIRPORT—This booster pump will be used on a pipe line through which fill will be pumped for an expansion of Newark (N. J.) airport. New runways are sought in the expansion by the Port of New York Authority. (Wide World Photo)

NATIONAL AIRPORT GROWS—F. H. Martell & Co., Washington, D. C. contractor, expects to complete this $1,500,000 extension to the terminal at the National Airport a month ahead of schedule, next December 1. It adds 61,000 sq ft, most of it for airline offices, to relieve congestion.

Sewage plant cuts beach quarantine

Quarantine of southern California beaches resulting from discharge of Los Angeles sewage has been reduced to 4½ miles by the State Public Health Department. The quarantine has been in effect since 1948 and has included as much as 12 miles of beaches on Santa Monica Bay.

The recent quarantine reduction is the direct result of placing in service the first units of the $41,000,000 Hyperion sewage treatment plant (ENR May 27, 1948, p 48). On May 15 the headworks (including bar screens, communiters and grit removal tanks), primary settling tanks and digesters were placed in operation with suitable civic ceremonies. Immediately thereafter a team of state health officials began a month-long survey of shore waters in Santa Monica Bay to determine the effect of these units on beach pollution. The relaxed quarantine is the result. (Pollution criteria used include visible signs of contamination and not more than 20% of samples of water taken at one point having ten or more E. Coli per cc.)

• **Partially completed**—Only 60% of the sewage flow is being handled by the new units. The remaining sewage is still routed through the old screening units. Entire flow is discharged through the recently completed mile-long, $3,000,000 ocean outfall (ENR Aug. 5, 1948, p 64). Secondary treatment facilities are still under construction and they will gradually be placed in use with the completed plant expected to be in operation sometime next year.

Meanwhile, a debate has developed between the Los Angeles City Council, the Department of Public Works and the city engineer as to financing operation of the new treatment plant and who should operate it. Everyone was in agreement that a sewer rental charge was necessary—that is, everyone but the city council who overwhelmingly turned it down.

• **Proposed charges**—Schedule of monthly charges was to have been 75¢ for dwelling units, 16¼¢ per hotel room and 75¢ to $116.25 for business and industry based on water meter size. The sewer service charge would have netted almost $6,000,000 annually. This would have been used to operate the plant (estimated at $1,000,000 a year), to retire bonds, and for other municipal purposes. Main opposition against the measure was the contention that outlying developments would be getting sewer installations at the expense of taxpayers who had already paid.

The plant is being operated by city employees under the direction of G. A. Parkes, senior engineer in charge of plant design for city Bureau of Engineering. A Board of Public Works proposal had recommended the hiring of Metcalf & Eddy, Boston consulting engineers, for a year.

Under the board's plan, the Boston firm was to place five key operating engineers in charge of the plant for the first year. However, this scheme was overruled by the city council at almost the eleventh hour. An operating staff was then recruited.

Unions, builders sued on anti-trust charge

The construction industry last week watched the unusual phenomenon of a state action—on an anti-trust basis—directed against building trades unions and contractors. The charge was forming "discriminatory liaisons" to control purchase of building materials, markets and, through these controls, limit competition.

In a Texas District Court at Austin, Houston's Building and Construction Trades Council and 10 contractors were putting in their defense against the state's first anti-trust suit involving labor unions. Defendants were under a temporary injunction which forbade picketing or boycotting any firm in the absence of a bona fide labor dispute. And the contractor-defendants were to be free to buy materials from those firms the union accused of being unfair.

State's attorneys charged that agreement had been obtained by the council from the contractor-defendants not to buy from seven companies which the council listed as unfair. Texas law forbids conspiracies by labor unions, as well as by corporations and individuals, which would restrain trade.

Defendants with the council were: W. S. Bellows Construction Corp.; Southern Builders of Houston; Farnsworth & Chambers Co., Inc.; R. F. Ball Construction Co., Inc.; E. D. Howe Construction Co., Inc.; the Austin Co.; the Rust Engineering Co.; the Southwestern Construction Co.; James B. Dent; J. M. Odom; and the Gulf Coast Construction Employers Council. The latter is not listed as agreeing to any boycott action, but as an agency to make known to its members union demands.

Gen. Fleming takes over top transportation job

Maj. Gen. Philip B. Fleming, formerly administrator of the Federal Works Agency and chairman of the Maritime Commission, took office July 24 as Under Secretary of Commerce for Transportation.

General Fleming has had long experience in top federal positions in the construction field. He was district engineer for the Corps of Engineers at St. Paul, Minn., in 1937-39. In October, 1939, he became administrator of the Wage and Hour Division, Department of Labor, holding the post until he became administrator of the Federal Works Agency in December, 1941. He remained in that position until June 1949, when he was appointed chairman of the Maritime Commission.

Military has plant to handle training

Little if any private construction cutback seen resulting from military construction requirements

Cutbacks in prospect for private construction and civil public works are not based on any immediate need for military building. The armed forces have nearly all the plant they'd need to expand their manpower to any limits contemplated now by Washington planners.

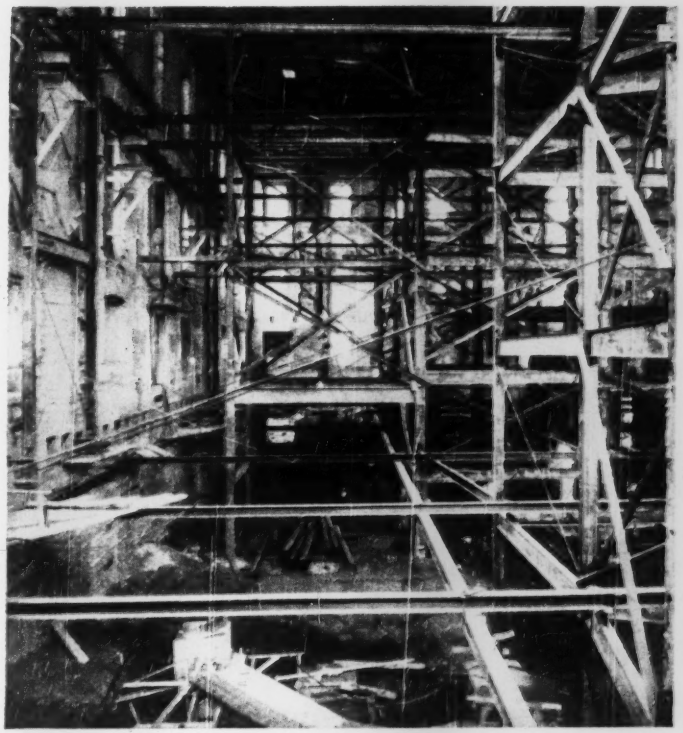
Military public works appropriations for the Corps of Engineers and the Bureau of Yards and Docks in the current fiscal year give no present promise of rising sharply above last year's $180 million. A total exceeding $200 million for military construction by the two services—in the twelve months ending next June 30—was the most that could be predicted, according to informed Washington opinion last week.

• **War ended economy**—In the omnibus appropriation bill now before Congress, the Defense Department should get a good part of the military public works money requested in last January's budget message: $75,000,000 for the Corps and $63,000,000 for the Bureau. Before the attack on Korea, the House had rejected these funds entirely; but, in the Senate, the appropriations committee had restored them almost in full. The Senate now is expected to approve the committee action, and the House undoubtedly will go along when the bill gets to conference. With an election coming, no Congressman will want to go on record against defense funds.

Out of the $10 billion for defense that President Truman has asked for, some money will be allotted to military public works. The Navy could use twice the budget sum, but doubling of its public works funds is hardly expected. For the Corps, opinion last week indicated a proportionate increase smaller than that anticipated for the Navy.

Even a modest military construction program will have some effect on nondefense building. Voluntary allocations by manufacturers will give preference to defense jobs for materials like steel, cement, lumber and gypsum board.

A similar effect may be more noticeable in deliveries of construction equipment. The military services will get money in the defense appropriations to replenish their stocks of tractors, trucks, cranes and other equipment items. While military orders are being filled, other purchasers may have to wait two or three months for deliveries.



IT'S A HOME—Here's what the White House looks like these days—from the inside, anyway. The $4,500,000 remodelling job is about one-fourth complete, is a month ahead of schedule. When it's complete, the original rooms will have been restored, just as they were before demolition. And there's a two-story basement. (Wide World Photo)

Red River flood control held possible

Red River floods in Manitoba can be controlled, according to General A. G. L. McNaughton, chairman of the Canadian section of the International Joint Commission.

General McNaughton spoke at the end of a three-day joint meeting of the Commission at Ottawa: "I believe we can give the protection that is needed," he said, "but there is no one set of measures that will do the job. What we have to investigate now is a combination of measures that will bring safety."

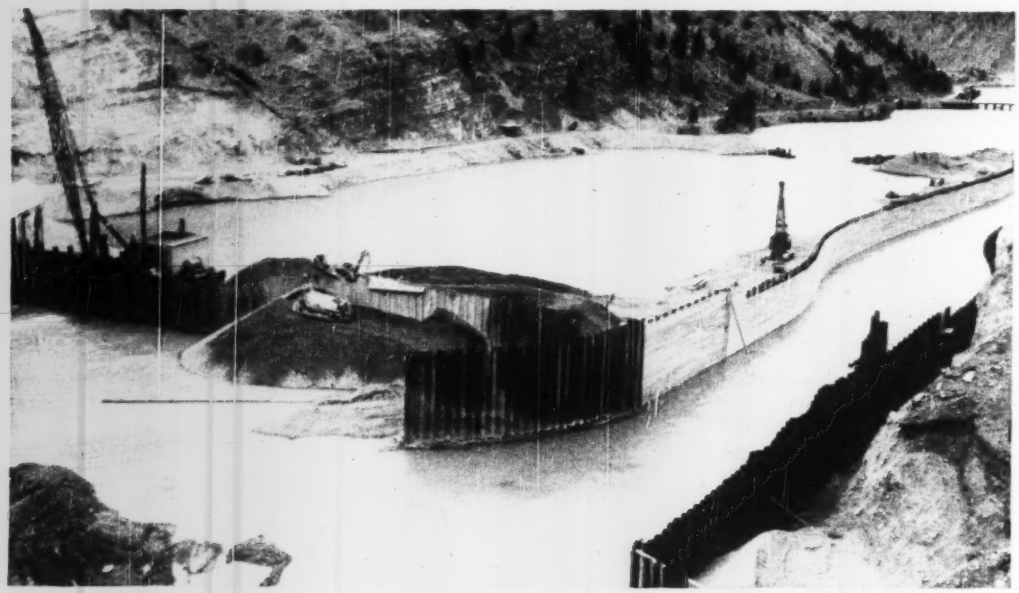
Flood control of the Red and Assiniboine Rivers was the chief business. These rivers have been responsible for the periodic flooding of Winnipeg. The Red River caused the recent disastrous flood. (ENR May 18, p 23). Emergency diking work in the vicinity of greater Winnipeg allowed time for long-term plans for the control of the whole watershed.

McNaughton also announced that the Commission had also considered the abnormally high water levels in Lake Superior. The International Board of Control of the lake had advised the Commission that the level was approaching the provisional upper limit of 603.6 feet above sea level.

On instructions from the board, maximum discharge has been taking place through all outlets since June.

The Commission also received a report from the Passamaquoddy International Engineering Board regarding tidal power development in Passamaquoddy Bay, off the bay of Fundy.

Canadian section of the Joint Commission has been completed by the appointment of J. Lucien Dansereau. He replaced the late J. A. Glen, chairman of the Canadian section until his death a few weeks ago. General McNaughton has become Canadian chairman. George Spence is the third Canadian member.



THE MISSOURI RIVER now flows 1,000 ft through a steel-framed, timber-lined, rectangular flume near Helena, Montana.

Diversion Is the Big Job

William P. Price, Jr.
Construction Engineer
Bureau of Reclamation, Canyon Ferry, Montana

THE RELATIVELY SMALL SIZE of Canyon Ferry Dam proves that tough construction jobs can come in small packages. And, potentially, the worst construction hazard rests in the diversion of the Missouri River through this flood season and next.

The 212-ft high, 470,000 cu yd dam is in its first construction stage with excavation under way and concreting ready to start. Located 17 miles northeast of Helena, Mont., the project is planned to control flows that sometimes exceed 30,000 cfs, supply irrigation water to 340,000 acres, permit production of 50,000 kw by three units and regulate discharge for six downstream plants of the Montana Power Co.

• Diversion problem—River diversion was complicated by both design of the dam and the physical features of the canyon.

The dam is to have a center overflow spillway that will occupy the original riverbed from the sheer rock of the left abutment to a point near the right bank. There appeared to be not enough room in the canyon for open channel diversion if the spillway section were to be built in a single construction stage.

How about tunneling? The abutment rock ruled this out. It would have been a slow and costly process to dig a tunnel or tunnels of sufficient flow capacity in the hard, brittle rock of the canyon. Drilling would have been difficult and blasting dangerous due to tendency of the rock to fracture excessively.

• Diversion answer—To solve this problem, the contractor built a 65-ft wide rectangular flume extending 1,000 ft along the river's right bank.

Design of the flume represents a carefully considered compromise. The contractor struck a balance between cost of larger capacity diversion works and possible cost of damage if this diversion structure is overtopped. He chose 23,000 cfs as the design flood—despite the fact that flow exceeds that rate at an average of one year out of five.

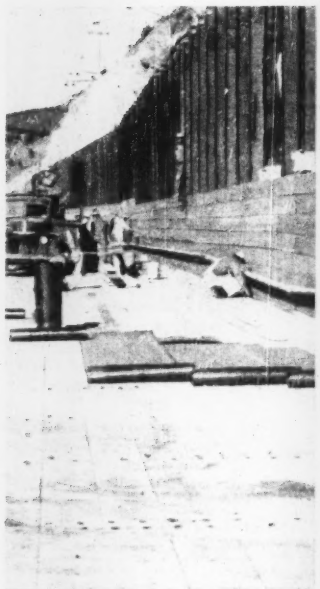
By crowding the freeboard of the flume, a flow of 25,000 cfs might be accommodated, but that's still far below the 34,000 cfs record discharge of June, 1948. If flows in excess of flume capacity occur, the contractor plans to dig a channel around the upstream cofferdam's left end. This would mean flooding the excavation, but, at least, it should save the cofferdam.

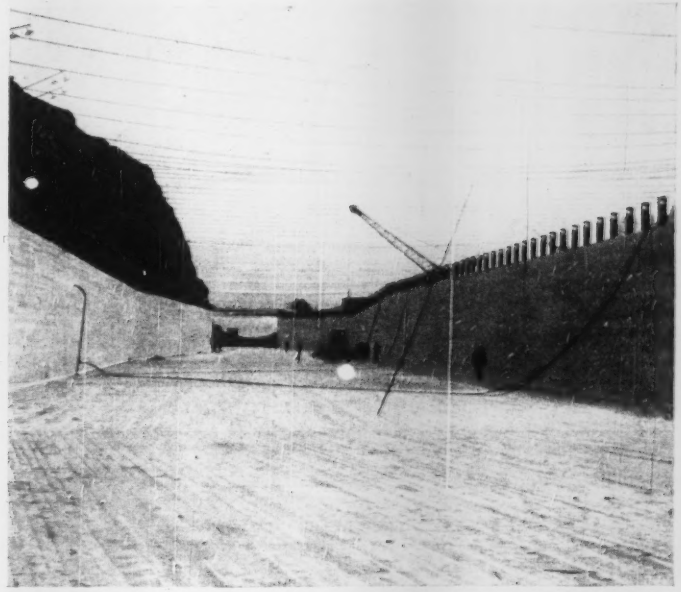
(On June 10, water broke through the gravel and talus material under the floor of the flume near its inlet. Earth eroded from around supporting piles, and the excavation was flooded; all but one dragline and a pump had been removed. Riprap, sacked concrete and clay have been dumped to stop leakage.)

• Flume construction—With its floor level at the normal river surface elevation, the flume is—for most of its length—on a bench in the rock abutment. The bench is partly in excavation required for the dam and power plant; partly outside of the pay excavation lines.

Steel sills spaced on 6-ft centers support the flume throughout its length. Where they are on the rock, the sills have been embedded in concrete anchored to rock with 1-in dowels set on 6-ft centers. The sills—6 WF 15.5 lb beam sections—had 1-in. rods spot-welded to them, like legs, for support while the concrete foundation was poured.

Where sills could not be founded directly on rock, piles were driven, and a heavier sill section was used—





FLUME LINING is bolted 4-in. plank—covered with roofing paper, then finished with ship-lap. Flume width is 65 ft.

at Canyon Ferry Dam

8 WF 21. Type of pile used and spacing of piles in each bent were determined by the depth of pile penetration. Where penetration exceeded 15 ft, timber piling was used with a maximum of 4 ft between piles. With penetration under 15 ft, 6-in. steel H-piles were driven on 3-ft centers.

Flume walls and flooring consist of 4x10 and 4x12-in. planks grooved on both edges and joined together with 1x1¾-in. splines. Over the planking is placed a layer of roll roofing material, and 1-in. ship-lap is nailed over that.

• Discharge control — About 61 ft downstream from the intake of the flume, stop-log slots are built into the side walls, and a recess with a removable cover is built into the floor.

The vertical slots are 2 ft 7 in. wide and 13 in. deep, running the full height of the wall. They will hold 67x3-ft stop logs built to close off flow through the flume.

The covered recess in the floor is to have a vertical beam section inserted in it to back up the stop-logs when they are used. The reaction of the lower end of this beam will be transferred to members embedded in concrete under the floor of the flume; the reaction at the top will be carried to bent members by two horizontal 12-in. steel beams across the flume.

Upstream from the stop-log slots, flume lining extends 25 ft above the floor, and bents are designed to carry a water depth of 22½ ft. Downstream from the stop-logs, planking goes 18 ft above the floor, but roofing and ship-lap is only about 11½ ft up the walls; design depth here is 15 ft.

The inlet transition section of the flume is constructed of interlocking steel sheetpiling driven to rock. Both inlet and outlet ends of the flume are protected by steel sheetpiling cutoff walls. They are capped with concrete blocks to which the first few sills are bolted. The downstream end of the flume is further protected by placement of heavy riprap.

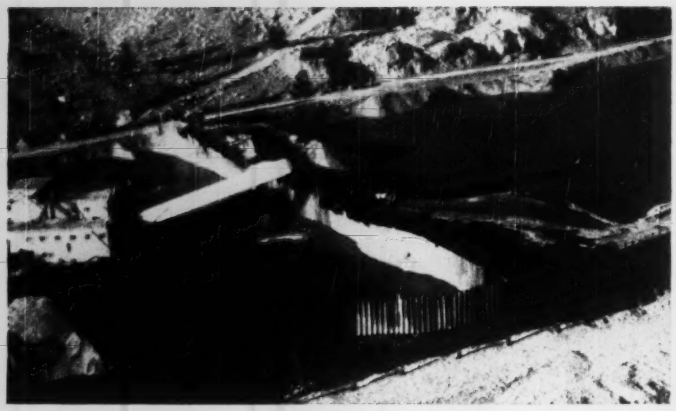
• Cofferdam construction — Upstream and downstream cofferdams are interlocking steel sheetpiling driven to rock and backfilled with sand and gravel from the river bottom.

An unusual item of equipment used in excavation of the foundation area and construction of the cofferdams was a floating gold dredge. Working its digging ladder back and forth across the riverbed in the foundation area, the powerful bucket-line machine deposited the excavated material along the banks. Its gold recovery equipment was disconnected and the material passed directly from the digging ladder to the conveyor in the stacker.

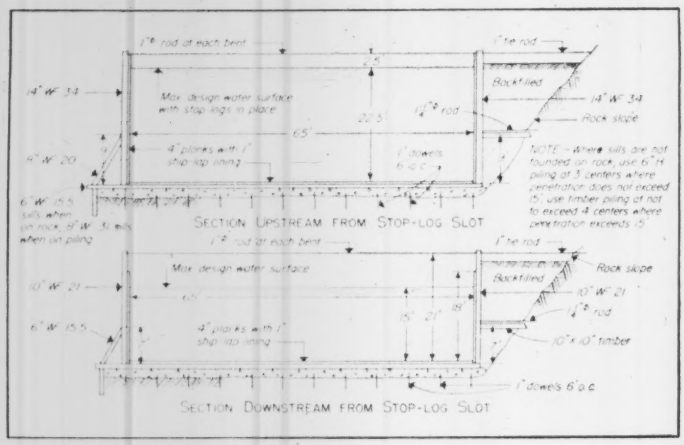
Before sheetpiling was driven for the cofferdams, and gold dredge was used to excavate a trench across the river along the line of each cofferdam. The larger material from this excavation was stockpiled for later use as backfill, and as much as possible of the finer material was permitted to flow back into the bottom of the trench. This formed a solid support through which the piling was easily driven to rock.

Openings were left in both upper and lower cofferdams to pass the river until final closure was effected. A barge-mounted stiffleg derrick with a steam-driven hammer was used to sink most of the sheet-piling in the river, including guide piles installed in the closure section. These guide piles were driven to rock at intervals of about 6 ft. Between them, the contractor placed groups of four steel sheetpiles, drove them to rock, and then withdrew them between the guide piles to above water level. There they were held until final closure, when they were driven down to cut off all flow and send it through the diversion flume.

Before the actual diversion, Montana Power Co. had released most of the water from Lake Sewell behind the



GOLD DREDGE was used to take gravel from river bed, deposit it through its stacker boom on diversion cofferdam. (Bureau of Reclamation photos)


1" rod at each bent
1" tie rod
Backfilled
14" WF 34
Max. design water surface with stop logs in place
22.5'
14" rod
Rock slope
65'
4" planks with 1" stop log lining
1" dowels 6'-0" c.
14" WF 34
6" WF 15.5 (sills when on rock, 8" WF 31 when on piling)
NOTE – where sills are not founded on rock, use 6" H piling at 3' centers where penetration does not exceed 15', use timber piling at not to exceed 4' centers where penetration exceeds 15'
SECTION UPSTREAM FROM STOP-LOG SLOT
1" rod at each bent
1" tie rod
Max. design water surface
Backfilled
Rock slope
10" WF 21
65'
15'
21'
18'
14" rod
6" WF 15.5
4" planks with 1" stop log lining
10" x 10" timber
1" dowels 6'-0" c.
SECTION DOWNSTREAM FROM STOP-LOG SLOT

SECTION VARIES—Upstream from its stop-log slots the flume is designed for greater depths it must hold during changeover to second stage diversion.

old Canyon Ferry Dam just above the new damsite to make storage space available. When the diversion was made, there was enough capacity available in the old reservoir to close off the river and store all its natural flow for 12 hours, while the cofferdam closure was being effected.

• **Flow in flumes**—Use of the flume presents an ideal opportunity to study flow characteristics in a full size structure. Staff gages are installed in pairs on its walls throughout the flume's length, and a program is set up for reading the gages at various discharge volumes. The U.S. Geological Survey is cooperating by making actual streamflow measurements against which the discharge capacity of the flume is checked. Measurements made so far at discharges of 4,150 cfs and 5,190 cfs checked very closely with the design curve. Further checks will be made as runoff varies.

• **Cofferdam leakage**—Early in the spring, the contractor began pumping down the area between the two cofferdams. Inflow from leakage was high. A dumped clay blanket was, therefore, placed over the outer faces of the upstream and downstream cofferdams, and the installed pumping capacity was increased. This combination of clay blanket and larger pumping capacity had the effect of drawing the clay into the pervious material of the cofferdams, sealing it to a large extent against leakage.

The hole has now been unwatered to a depth of about 50 ft below the river level. And a further program of grouting with bentonite, cement, and sawdust has been carried out without much success. Leakage remaining is estimated to be 8,000 to 10,000 gpm. The contractor's present plans for care of the water during the construction period include cleaning the entire foundation area to rock for a distance of about 10 ft upstream and downstream of the concrete construction. He has built concrete cutoff walls to intercept leakage and lead it to sumps, from which it is being pumped into the flume.

• **Stage 1 construction**—After left abutment foundation has been grouted, concrete placement will begin. In this portion of the dam there will be four 84-in. dia permanent river outlet conduits. In addition to these permanent outlets, the contractor will be permitted to construct two 10-ft dia temporary river diversion tubes through the dam. Also, low blocks will be left for carrying high flows during second stage diversion.

Changeover to second stage diversion will involve placing the stoplog gate structure in the diversion flume and diverting the river through the river outlet conduits. Auxiliary cofferdam structures will then be constructed at the upper and lower ends of the flume, so that the flume can be removed.

Concrete will be placed from a 1,400-ft cableway spanning the canyon (crest length of the dam will be 1,000 ft.) With this cableway, the contractor will be able to place directly all concrete in the dam and the powerhouse; he will have to rehandle some of the material for the downstream part of the spillway apron.

• **The builders**—Canyon Constructors, a group composed of Brown and Root, Inc., Winderlich Contracting Co., Griffith Co., and J. C. Maguire & Co., is building the dam on a bid of $11,896,000. J. C. Maguire is the sponsor company.

Larry P. Sowles is project manager, and K. E. McDougal is construction superintendent. Henry Helland, chief engineer for the contractor, supervised final design of the flume—a revision of the original design by Fred W. Crocker of J. H. Poincroy & Co., Oakland, Calif.

For the Bureau of Reclamation all design and construction are under the supervision of L. N. McClellan, the bureau's chief engineer. Administrative direction is under Kenneth E. Vernon, regional director for Region 6. The dam is in the Upper Missouri District of Region 6; Harold E. Aldrich is acting district manager. On the job for the bureau, Gordon W. Monly is field engineer and Preston M. Schwartz, acting office engineer.

Asphalt Underseal Rehabilitates Canal

Jewell R. Benson and Lewis M. Ellsperman
Bituminous Engineer Materials Engineer
U. S. Bureau of Reclamation, Denver, Colo.

FULL CAPACITY of an important concrete-lined irrigation canal in Washington was restored this spring by asphalt undersealing.

Water leakage through cracks and openings in the lining has washed away part of the underlying fill. The asphalt underseal filled these voids (large ones were filled with a soil-cement mixture first) and sealed cracks from the underside.

The canal is the Pomona section of the Yakima Ridge canal, built in 1936. To date only half the capacity has been used, but completion of a power drop required full capacity of the canal this year and so remedial work was necessary.

Asphalt undersealing has been used extensively on highway and airport pavements. Successful use of that method on this USBR canal at a relatively low cost ($1.38 per sq yd) indicates applicability on other hydraulic structures such as reservoir linings and siphons.

In the past, remedial measures to minimize leakage by surface treatments have proved effective. However, these methods often are not permanent solutions and are usually expensive and difficult to accomplish. Sealing material cannot be introduced into the crack space and the seal thus "bridging over" the crack, may be destroyed by the slightest movement.

An even more important advantage than leakage control is the preservation of the lining by the new method. This is done through restoration of subgrade support to linings from which support has been removed by the leaching or eroding action of leaking or subsurface waters. Such cavities and voids beneath linings introduce high stresses in the lining. Moreover, the leaking water may produce serious frost or ice heave conditions in some areas, which contribute to lining deterioration.

• Earlier work is guide—The Yakima Ridge work was based on asphalt undersealing work done last fall in Wyoming. A 400-ft reach of the Wyoming canal above Pilot Butte reservoir was undersealed in an area where sloughing embankment (due to water leakage) threatened adjacent oil wells. This canal has a bottom width of 12 ft and a side slope length of 23.5 ft. It carries water for power generation at Pilot Butte and must be maintained in service at all times except for a 2-week period in the fall and a similar period in the spring. During severe Wyoming winters, high lining stresses are created by formation of a 1- to 2-ft coating of surface ice.

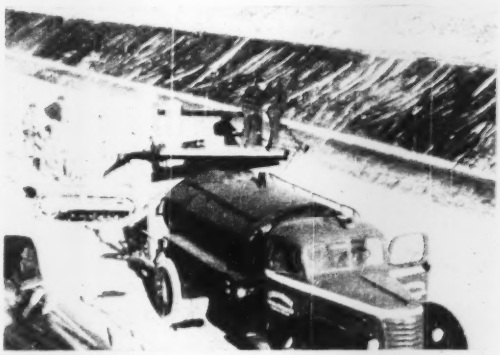
On this Wyoming canal, 8,000 gal of 25-40 penetration, 175-200 softening point asphalt was required to effect sealing and subgrade support. This was introduced through 1-in. holes on 6-ft centers.

Size of some cavities is indicated by one hole that required 700 gal of asphalt before sealing. An average of 3 gal per sq yd of lining was required for this job. Inspections early this year indicate satisfactory sealing in this section.

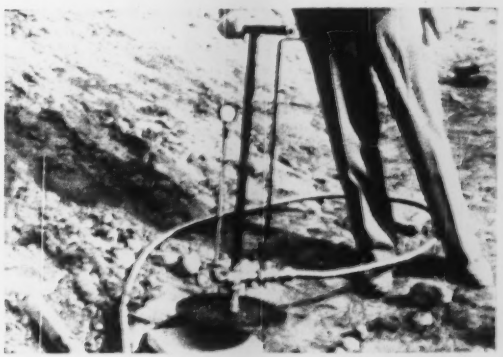
• Problems involved—Planning for the much larger Washington undersealing job was based on the Wyoming work. This Pomona canal crosses a lava and basaltic area. In the original construction the rough blasted channel was backfilled with soil to provide a maximum depth of soil subgrade of 3 in.—exceeding 12 in. in many places. Water leached appreciable quantities of soil into the porous lava foundation. This induced further cracking and in some places actual subsidence of the lining surface.

• Sealing method—First step was to drill holes through the lining for a distance of 1,000 ft (canal section is 14-ft bottom width and 13-ft lining depth). From experience gained in Wyoming, a drilling pattern was set up to require a minimum of holes, yet permit adequate flow of asphalt under the lining. Holes were drilled not less than 18 in. from joints or cracks, with additional holes in the center of panels and other areas. Maximum spacing of holes was about 8 ft.

One of the interesting effects noted in Wyoming was the fact that the asphalt underseal could readily traverse the space below ordinary joints and cracks without excessive loss of material through to the surface. This fact greatly simplified drilling pro-



ASPHALT UNDERSEALING restored capacity of this irrigation canal by sealing cracks from the underside.



ASPHALT GUN, specially designed for the work, is made up of standard pipe fittings.

cedure and lessened the number of holes required.

In order to drill on the steep side slopes (1 on 1½), the operation and maintenance section of the project developed a movable platform mounted on skids. The truck-drawn skidding greatly facilitated side slope drilling and the idea was enlarged upon later by the contractor performing the asphalt undersealing.

Examination of the holes during drilling indicated that the average separation between subgrade and bottom of the lining was less than 1 in., though a few holes showed 1 ft or more separation. From these data it was indicated that the quantity of asphalt required for filling the voids below the lining, though large, would not be excessive.

• Soil-cement for large cavities—Several large cavities were discovered under portions of the lining—the largest in the transition between the canal and a siphon. To fill this cavity, which was open at the top of the transition, a semifluid mixture of soil and cement was made and trowled into the opening. Some 50 cu yd was required to fill this hole, with some material moving by gravity downward alongside the siphon as much as 90 ft.

Besides this, several subsided areas of lining indicating excessive loss of earth subgrade were also partially filled with the soil-cement mixture. In these areas, a piece of lining about a foot square was removed near the top of the section and the soil-cement mixture trowled beneath the lining.

The soil-cement mixture thus filled the largest cavities and reduced the quantity of asphalt required. Shrinkage of the soil-cement as it set up left sufficient space below the lining so that the flow of asphalt was not impeded during undersealing.

A contract for furnishing and applying 23,000 gal of asphaltic material to this 1,000-ft section was awarded to the Columbia Asphalt Paving Co. of Yakima for the contract price of 25¢ a gallon.

On the Yakima work, 50-60 penetration, 140-175 softening point asphalt was loaded at 400 F and shipped from a refinery at Willbridge, Ore., in insulated tank cars, arriving at Yakima with only minor temperature loss. A locomotive (loaned by the Northern Pacific R.R.) was shunted on a siding opposite the tank car and steam from the engine was used to maintain temperature on the tank cars. Asphalt at from 250 F to 300 F was transported to the canal site in a 1,000-gal insulated tank, supplying a 1,250-gal distributor. The distributor operated from the bottom of the canal, entering by a ramp, and supplied asphalt through a flexible metallic hose to the workmen handling the asphalt gun.

• Controlling asphalt flow—The bottom of the canal was undersealed first, advancing as asphalt showed up in open holes ahead, or as slight lift was observed in the lining. Holes were temporarily capped with wooden plugs as soon as the gun (operating at 15 psi) was withdrawn, to prevent loss of asphalt. Flow was controlled largely by observing asphalt flow ahead, by steam emanating from joints and cracks, and by observing the movement of slab sections. The latter proved to be an excellent means of control. Experiments with an elaborate electrical signal control system on the Wyoming canal had previously indicated that careful observation of slab movements could be used to satisfactorily gage asphalt flow and prevent excessive movement or displacement of the lining.

Due to hydrostatic pressure that developed beneath the bottom and lower portions of the lining, the side slopes normally were not pressured until the adjacent bottom areas were thoroughly cooled. However, some portions were satisfactorily undersealed on the side slope prior to the bottom. In usual practice, side sealing was done one or two days after the bottom sealing.

The undersealing of the side slopes began on the lower portions and progressed to the upper areas. To permit rapid operations on the steep side slope, the contractor rigged a small tractor having a front-end lift with a platform 8 ft long and 3 ft wide provided with a side rail for safety. By this means, the tractor operator could maneuver the platform into position where the gunman could spot the gun without moving from the platform. This arrangement greatly facilitated the work.

• Asphalt injection—The asphalt gun used was designed by the bureau and was fitted to inject asphalt in either true or badly spalled holes. Only a single hose line to the distributor was used in contrast to the two circulating lines commonly used in highway work. The one line was found to be entirely adequate, largely because of the effective organization of the procedure by the contractor, permitting movement from hole to hole without excessive loss of time.

Using a 14-in. flexible metallic hose and one asphalt gun, a load of 1,100 gal could be applied in approximately 30 min. With one supply tank operating between the canal site and the tank car siding, about 5,000 gal could be applied in a working day.

To determine the feasibility of using tank truck delivery, one transport load of 5,000 gal was trucked from Willbridge to Yakima, the material being delivered directly to the job. The asphalt was loaded at 400 F and arrived at a temperature of 350 F, a loss of only 70 F in transit (200 miles). With the transport at the job site, facilitating loading of the distributor, the 5,000 gal was applied in approximately 5 hours' total time, a considerable saving in time over railroad tank car transport due to the elimination of heating and the supply tank haul.

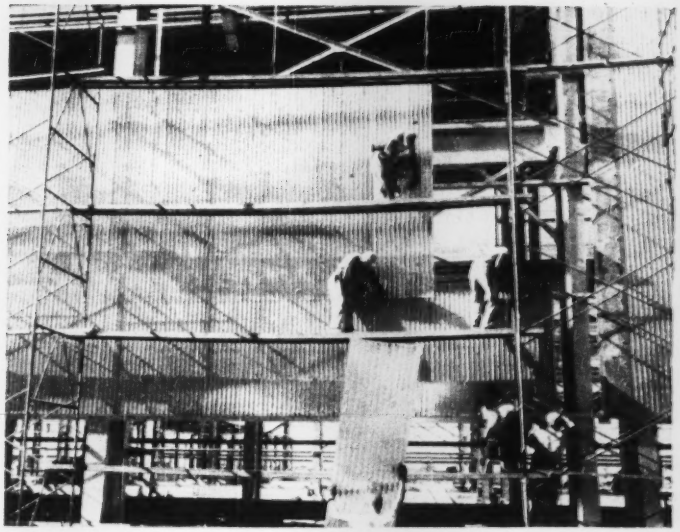
• Lower softening point—The use of a lower softening point (140-175), 50-60 penetration asphalt on the Yakima project (in contrast to the 175-200 softening point, 25-40 penetration asphalt used on the Wyoming canal) permitted much easier handling of asphalt at lower temperatures. The greater asphalt plasticity was of greater value for sealing and subgrade support.

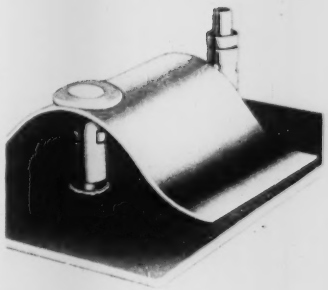
A total of 33,050 gal of asphalt was required to underseal the 1,000 lin ft of canal, averaging 5.3 gal of asphalt a sq yd. This represented an overrun of 10,000 gal over the original estimate of quantities required—due to the greater-than-estimated size of the cavities and voids beneath the lining. This factor has proven generally difficult to estimate since one or two large cavities may greatly increase the quantities of asphalt required. However, by carefully controlling flow, it is believed that even large voids may be blocked through intermittent pressuring, thus avoiding use of very large quantities of asphalt in subterranean channels where only plugging of the inlet is actually required for effective sealing.

The cost of the actual asphaltic material used and its application averaged $1.33 a sq yd. Drilling and preparation of the lining is estimated at approximately 5¢ a sq yd, making the total cost about $1.38 a sq yd.

• Advantages—Advantages of this method for the control of leakage through rigid-type linings and restoration of subgrade support are obvious. It seems equally obvious that the life of a deteriorated lining may be greatly prolonged through such treatment. One of the most obvious advantages of the method is the fact that the work may be done rapidly, permitting correction of gross difficulties during short periods of shutdown and under nearly any weather condition.

Work at Yakima was under the direction of O. W. Lindgren, project superintendent, and Harold Pease, construction engineer.





ALUMINUM SIDING for Point Comfort (Texas) Works was fastened with aluminum steel studs welded to the steel frame.

Fast Work on Aluminum Siding

RECORD-BREAKING SPEED was attained in erecting walls and roofs of the production buildings at the Point Comfort Works of the Aluminum Company of America. The job involved the largest single application of aluminum industrial corrugated roofing and siding to date.

With careful planning, taking advantage of the size of the job, the contractor swiftly installed 1,500,000 sq ft of roofing and siding, using stud welding for fastening the enclosure.

• **New works**—Point Comfort Works consists of 25 buildings on a 3,000-acre tract on Matagorda Bay, near Port Lavaca, Texas. Providing 184 acres of floor area, they include the pot rooms where aluminum is made, the engine rooms for production of electric power, a carbon plant and various service facilities. An air-conditioned building, with brick exterior, offers 15,000 sq ft of office space. All have structural steel frames.

Alcoa chose the Point Comfort area for its reduction works because of availability of natural gas. By means of generators driven by internal-combustion radial engines, the gas is converted into the electric power required to make aluminum (10 kw-hr per lb). The works will be able to produce 134,000,000 lb of the metal annually by electrolytic reduction of aluminum oxide.

• **Studs attached first**—The production buildings were enclosed in aluminum one at a time. As soon as the paint on the structural steel was dry, stud-welding crews, working from suspended scaffolds, installed all the studs for a building before the first sheet of corrugated metal was applied. The studs were inserted in the open end of a hand-held gun, placed against a steel girt and welded by pulling the trigger.

Templates 20 to 24 ft long, clamped to steel struts speeded the layout work. Variations in the 40-ft high by 33-in. wide corrugated sheets never exceeded ¾ in., making prior installation of all the studs safe.

Four welders were supplied with current from one 500-amp welding generator through 00 cable, which was held to less than 250-ft length. While the simultaneous operation of two or more guns at exactly the same instant would cause incomplete welds, experience showed that this never happened more than twice a day. The loss of time and materials was negligible compared with the savings in equipment.

Stud-welding quartets attached the studs required for 50,000 sq ft of roofing in 6 days. Double quartets placed those required for 90,000 sq ft of siding in 5 days.

• **Composite studs**—The studs used—a product of the Nelson Stud Welding Division of Morton-Gregory Corp.—have a steel welding base and an aluminum rivet extension that is tightly inserted in the steel (see sketch). Sheeting was forced over the extension with a hard-rubber-headed hammer. Then, an aluminum washer was slipped on and the fastening completed with a rivet set.

Four-man gangs applied the sheeting on the roof, working directly on the purlins. On many occasions, under ideal conditions on a straight away, one roofing crew installed more than 5,000 sq ft in a day. On the average, the roofing teams totaled between 4,000 and 6,000 sq ft per day.

Three-man gangs, operating from tubular steel scaffolding, erected the siding. On a peak day, one siding crew attached more than 4,000 sq ft. On the average, the siding crews totaled between 2,500 and 4,000 sq ft per day.

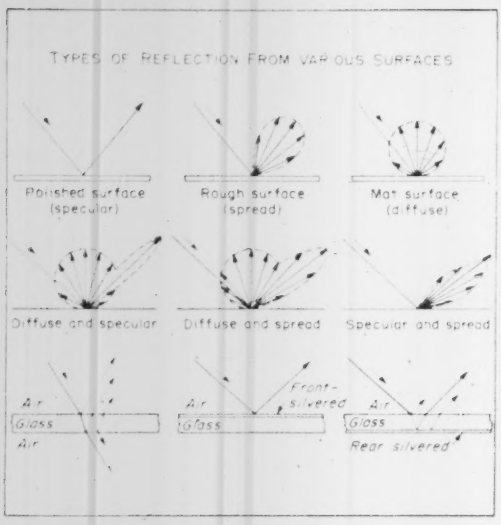
Consolidated Western Steel Co. was general contractor on the mill building construction. Lomar Olman Co. of Chicago was the subcontractor on the roofing and siding, with H. W. Wilson in charge. Wyatt C. Hedrick was architect and engineer.

Plan Irrigation Project For Sequim Valley, Wash.

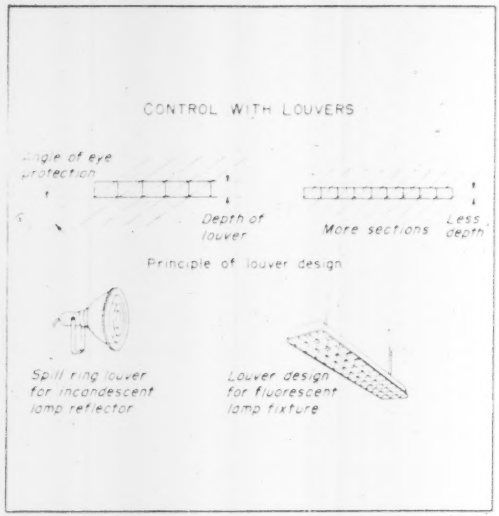
An irrigation system within shouting distance of the spot where the heaviest rainfall in the United States is recorded—that's what the Reclamation Bureau is considering.

Proposed project is in Washington's Sequim Valley, just east of the Olympic mountains, where the heaviest falls occur. Average fall is 15 in. yearly in the valley. Elsewhere on the Olympic Peninsula, there's as much as 100 in. yearly. The $4,809,000 proposal would divert water by canal from the Dungeness River to two reservoirs, then to a 19,000-acre irrigable area.

Light-control principles used in luminaire design



LAWS OF REFLECTION are scientifically applied in reflector design. Reflectors with specular surfaces are used for accurate control. Surface finishes produce various degrees of diffusion.



LOUVERS are utilized to shield the lamps from the eye. Light control may be improved by increasing the depth of the louvers or by using a greater number of baffles with decreased depth.

Light Control

Robert L. Zahour
Electrical Engineer, Commercial Engineering Dept.
Westinghouse Electrical Corp., Bloomfield, N. J.

DESIGN OF LIGHTING for new buildings offers great freedom in choice of lighting system, luminaires, wiring layout and control. Architects and engineers are able to coordinate structural details with lighting methods. The result is a better looking installation and more satisfactory performance.

To provide adequate illumination for the seeing tasks involved and for eye comfort, building designers should be guided by these suggestions:

1. The layout should fit the structural details of the building.

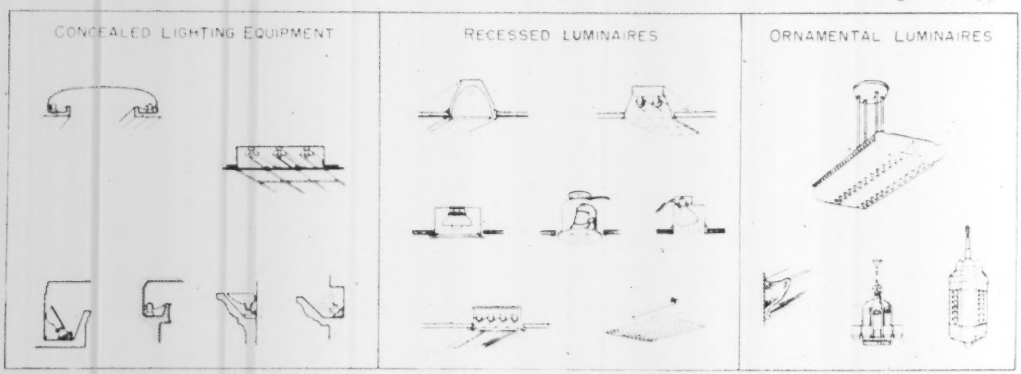
2. Conventional layouts with symmetrical spacing of units are preferred. Rows should be parallel and perpendicular to walls. Unsymmetrical patterns generally should be avoided.

3. Fluorescent luminaires usually are longer than the nominal length of the lamps. When continuous units are specified, fixture dimensions should be checked carefully.

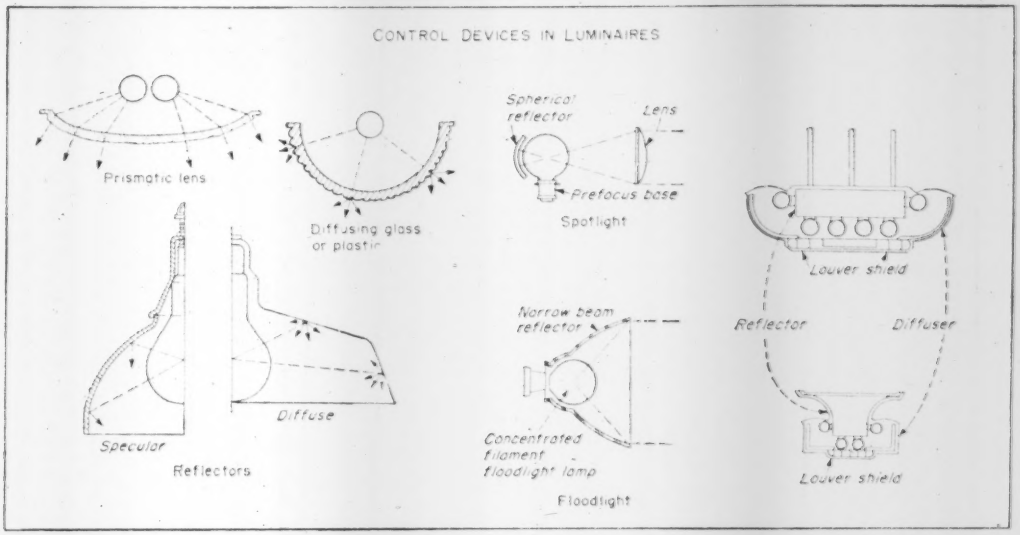
4. Continuous fluorescent units usually look better than individual units hung with small spaces between adjacent ends. Economies in wiring and installation costs generally result with continuous row mounting.

5. There is a trend to recessed and ceiling-mounted installations. Check to see that use of such equipment will not produce uncomfortably dark ceilings and excessive brightness ratios in

Luminaires and equipment available in a wide range of types



make possible adequate illumination for seeing tasks and eye comfort



PRISMATIC OR DIFFUSING MEDIA, as well as reflectors, may be specified to control light rays. Lamps should be shielded to prevent direct glare in the normal field of vision, and reflected glare should be minimized. Major considerations in the selection of light-control devices include efficiency, durability, ease of maintenance and attractive appearance.

the field of view. The brightness ratio of luminaire to adjacent areas should not exceed 20 to 1.

6. Suspended units that direct light both upward and downward produce the best lighting results most economically. Check the suspension length carefully and limit it to the value that gives reasonably uniform ceiling brightness.

7. Plan the maintenance program along with the lighting layout.

8. Consider the finish and reflection factor of ceiling and side walls.

• **Major considerations**—Luminaires used for general lighting purposes should provide a high overall efficiency and the necessary comfort in vision. Lamps should be shielded to prevent direct glare in the normal field of vision. Luminaires—especially those for offices, drafting rooms and reading rooms—should also minimize reflected glare ("Plan for Quantity and Quality in Lighting," ENR July 6, p. 42).

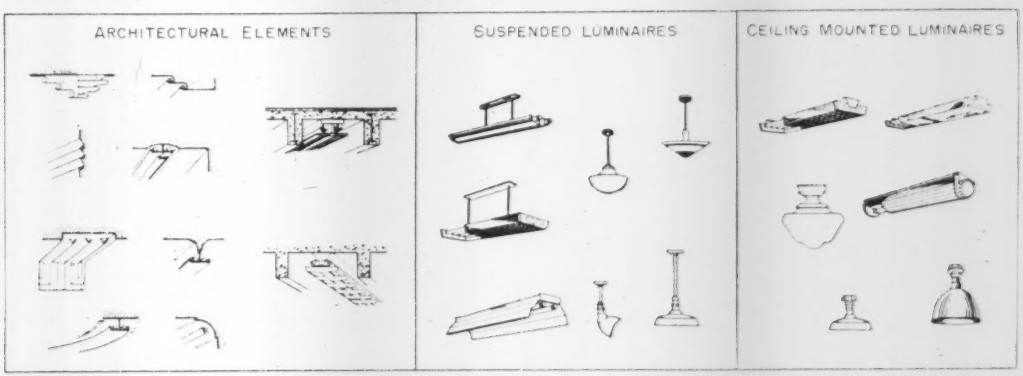
Depending on the type of area to be lighted, it often is necessary first to choose the type of luminaire that is to be used and then plan the equipment layout around the light distribution of the luminaires selected.

The trend is toward plain, simple lines in exposed or recessed fixtures.

• **Accepted practices**—Current techniques in solving lighting problems generally involve use of more than one type of lighting system on each project. For example, general lighting in stores may be any one of the five types of light distribution—direct, in which 90 to 100% of the light goes down; semi-direct, in which 60 to 90% goes down; general diffuse or direct-indirect, in which 40 to 60% goes down; semi-indirect in which 60 to 90% is thrown up to the ceiling; and indirect.

Current practice for industrial areas is to use direct lighting from suspended or recessed luminaires for general lighting and to provide localized lighting with reflector units.

enable designers to select most suitable light-control devices



Variety of concrete-forming situations satisfied by . . .

Unit Travelers for Viaduct Construction

FALSEWORK UNITS of two basic designs supported almost all deck concreting for a 2,430-ft railroad viaduct in Rockville Centre, N. Y.

Some high simplification was not easy, because conditions varied throughout the project. Viaduct widths ranged from 32 ft 8 in. to 52 ft; column spacing varied with the width; column heights ranged from 13 ft 6 in. to 47 ft 9 in.; and access (for falsework handling) ranged from poor to fair, depending on the nearness of structures, high-tension wires and other obstructions.

The viaduct is part of a grade crossing elimination project in this Long Island community. Total project length is 2 miles, three-fourths of it embankment pierced by bridges at six street intersections. Within the viaduct section there are four bridges and 19 sections of reinforced concrete elevated structure.

Each section of the viaduct is of continuous design, the continuity extending over from two to five column bents. Columns haunch up to drop panels topped by 2-ft thick deck slabs. Bent spacing is 25 ft 2 in. c. to c. of columns except that a 9-ft spacing occurs between the bents at the ends of adjacent sections. Here, the slabs are separated by a 2-in. expansion joint.

• Cheap forming system sought—In planning for continuous deck forming, the contractor, Rusciano & Son Corp., sought a common denominator that would lead to the economies of repeat-forming techniques. He also sought to minimize dismantling and re-erection. Hence, he needed unobstructed space to move form assemblies.

The common denominator was the uniform bent spacing. This uniformity suggested repetitive forms and falsework of constant longitudinal dimension.

Ready transverse movement of whole form assemblies was possible because of the slab and drop-panel design. Forms would need to be lowered only fractions of an inch before they had unobstructed space for lateral movement.

However, varying viaduct width meant a varying transverse dimension for forms. Moreover, there were situations where full-width forms for even the narrowest viaduct section could not be moved all the way out after stripping.

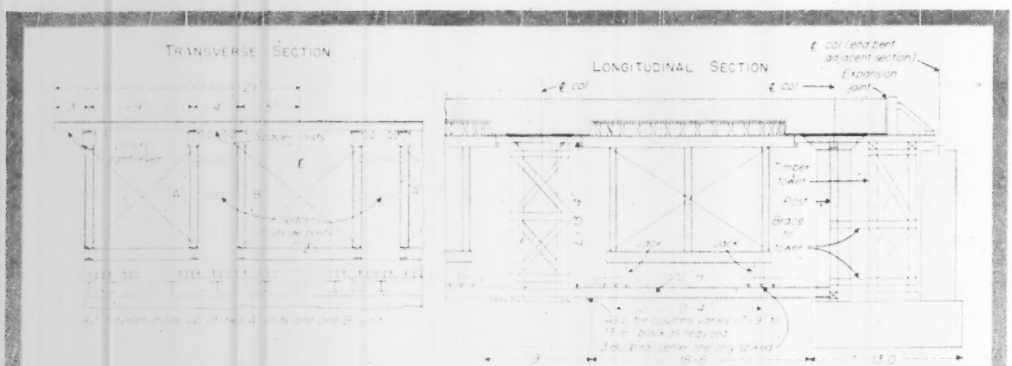
• Unit-travelers the answer—Rusciano designed wheeled unit-travelers, roughly cubic in shape, that could be string on rails between bents like the cars of a train. For form removal after stripping he pushed one unit laterally into the clear and picked it out of the way with a crane. He repeated the operation for a second unit and, in the bays of 13 sections, for a third.

Thirty-nine unit-travelers did the job. Form joists of 26 units (called "A" units) cantilevered 2½ ft on one side, bore on half the width of falsework beams at the other side. Form joists of 13 units (called "B" units) bore on half the beam width at both sides.

The difference between "A" units and "B" units is shown in the drawing. "A" units were exterior units; they overhung because deck construction extended short distances over small buildings in some cases. Various viaduct form widths (34 ft, 42 ft, 54 ft) were assembled by combinations of travelers and spacers, as shown. Five sections were 54 ft wide, needed only two "A" units per bay. Inadequate side clearances forced erection in place in one full section, as well as in a few bays of other sections.

• Units bear on footings—The deck forming system also accounted for the problem of varying dimension between top of footing and slab. Principal supports for deck form travelers were beams resting on the tops of adjacent footings. Height variations were effected by varying the thickness of blocking between footings and beams.

Traveler rails were laid on these beams and extended outside right-of-way for sectional-unit installation and removal. Units, which weighed 5 tons,



UNIT-TRAVELER TRAINS carry deck forms for continuous viaducts. Transverse section (left) is part of falsework for a three-unit 42-ft wide form; other widths attained by changing spacer lengths, removing center unit. Longitudinal section (right) shows how contractor took advantage of uniform bent spacing in designing unit-travelers for transverse movement.

were placed on rails by crane, with a four-way sling.

When a unit was in place, it was jacked and blocked to position a half inch above final grade. The half inch took care of settlement when concrete was placed.

Although clearance problems made consistent stripping and re-erection time-cycle observations impossible, in two favorable locations the process took two days. This cycle involved three unit-travelers in each bay of a five-bay section.

Overall time allowance for occupying a section was one month. The 39 travelers handled four sections at a time during the first three months and three sections during the fourth and fifth months. Moves were scheduled for minimum haul distance. In most cases movement to an adjacent section was possible. All moves were accomplished by crane-walking the 5-ton unit loads from old track to new track.

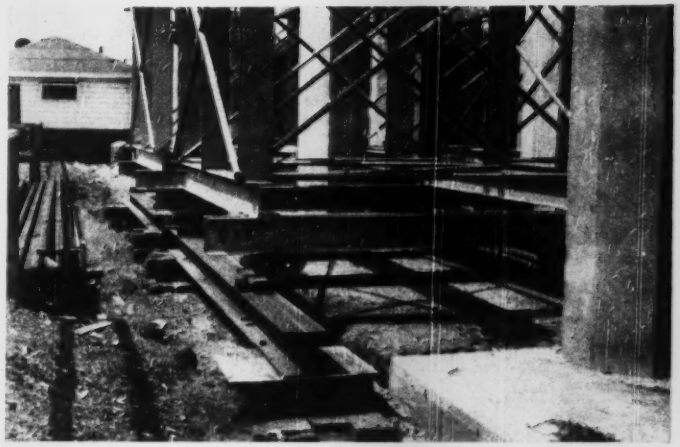
• **Special hoisting problem**—High-tension wires for the electrified railroad posed a serious problem in planning for hoisting. Even though power could be shut off while cranes worked, there was constant danger that booms would damage the wires. The condition was aggravated by the presence of many buildings close to the right-of-way.

In anticipation of this problem, the contractor's engineer worked out detail plans that showed where wires and building were, as well as where the cranes would have to be to obtain coverage for form handling and concreting.

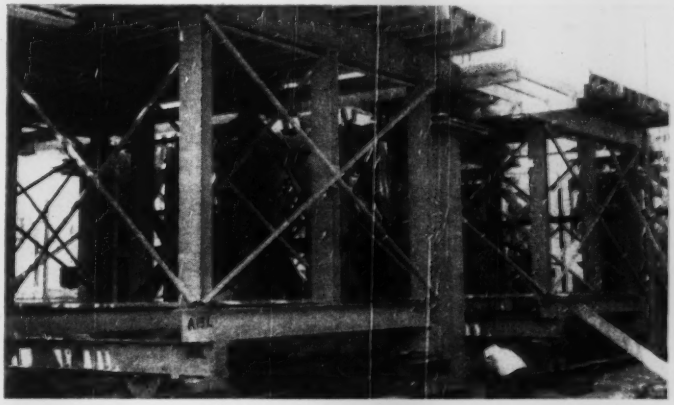
A concrete-placement problem was created by flat-slab and drop-panel design. Four-way reinforcing in drop-panel areas left little room for final cleanup before concreting. Brooming and even air-blowing were ineffective, but fire hoses did the job, washing dirt, wire and nails out of scuppers that subsequently were closed for the pour. Pours, each one for a full continuous section, ranged from 300 to 600 cu yd.

Work under this contract also included an express house and a passenger station, on which construction will be complete by the end of the year. Contract price for this full 2-mi project is $4,800,000. At letting time this was the largest contract ever let by the New York State Department of Public Works.

Project manager for Rusciano is George F. Bergmann; project engineer, J. Rosenholtz. J. J. Durey is district engineer (Babylon, N. Y.) for the New York State Department of Public Works. Arnold Goettler is resident engineer.



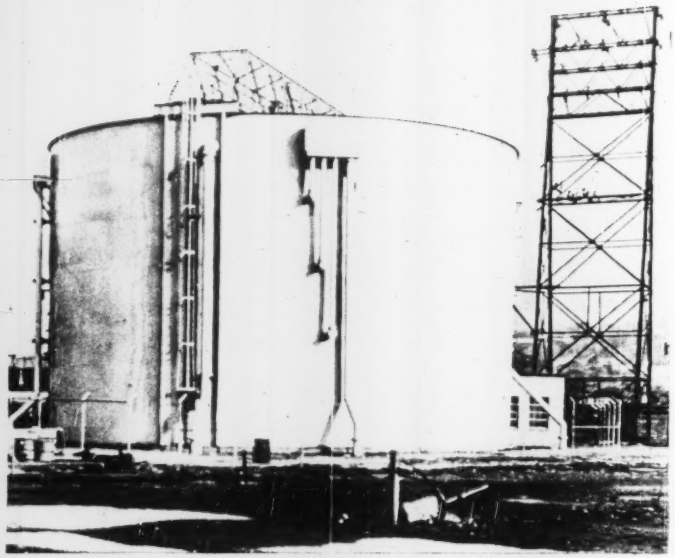
BEFORE FORM ERECTION, unit-traveler rests on rails. Inside construction line, rail-support beams bore on column footings, rather than on blocking, as shown here. Units are framed of steel, with timber caps on which form joists will rest.



DECK FORMS ERECTED, drop-panel forms started, after traveler is blocked off rails to position the forms ½ in. above grade. Weight of concrete will settle forms to grade without deflection. Note joist-projection of "A" units.

CLEAN UNDERSIDE of slab, drop panel, and column haunch remain when forms are stripped, unit-travelers are removed. Viaduct's total length: 2,430 feet.

1 SILICA SAND, emery, rouge and plaster of paris—cast off in glass making are . . .



2 CONCENTRATED in a four-deck thickener. Clear water from the top goes to the river. Highly abrasive slurry, drawn off from the bottom of the 70-ft-dia. thickener, is . . .

Intercepted Grit Prevents Pollution

Paul D. Oesterle
Dravo Corporation
Pittsburgh, Pa.

THE PITTSBURGH PLATE GLASS CO., in taking care of wastes from its Creighton plant, is one of those public relations-alert industries that's out in front in preventing pollution.

• **Lots of waste**—Several hundred tons of highly abrasive grit from glass grinding and polishing operations are given off daily from this plant. The rate of flow into the Allegheny River exceeds 4,500 gpm and the water mixture contains powdered glass, fine silica sand, emery, rouges, plaster of paris and a small amount of powdered iron. Diamond dust would hardly make a more abrasive solution.

To devise and build a feasible disposal system for these wastes, Pittsburgh Plate Glass called in the Rust Engineering Co.

Working with PPG's engineers, Rust worked out a method of disposal in which the solids are settled out and the clear water is discharged to the river.

The disposal system (see sketch) consists of: An industrial sewer under the glass-making plant; a pumping station that lifts the wastes to the thickener; a twin-pipe main with two booster stations; and a lagoon for thickened slurry.

Abrasive water from grinding and polishing operations flows through the industrial sewers to the sump with a vertical pumping arrangement. From this point it is raised to the top of a thickener.

In the four-deck, 70-ft dia thickener, the turbidity of the waste water is reduced to less than 100 ppm and a slurry is formed with a concentration of about one-third of abrasive materials. The clear water overflows from the top of the metal tank thickener and is discharged directly into the Allegheny River.

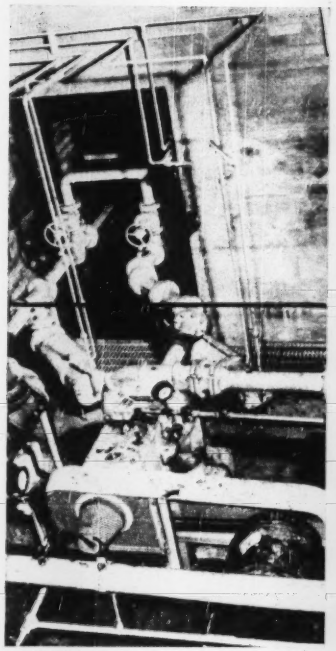
The slurry, drawn off from the bottom of the thickener, is pumped through a mile-long pipeline, over a 320-ft hill to a settling basin formed by damming up a natural hollow. In this 700- by 1,600-ft lagoon, solids settle out. Clear effluent passes over a weir into a small creek that leads to the river.

• **Twin pipes**—Slurry from the thickener is delivered to the lagoon through 4-in. extra heavy pipe. Two pumps in series in each of two booster stations keep the heavy mixture in motion. Each pump has a capacity of 230 gpm at 89 ft head. They are driven by 15-hp electric motors through V-belt drives. All pumps, motors and drives are identical. This permits interchange of parts and minimizes number of spare parts needed in stock.

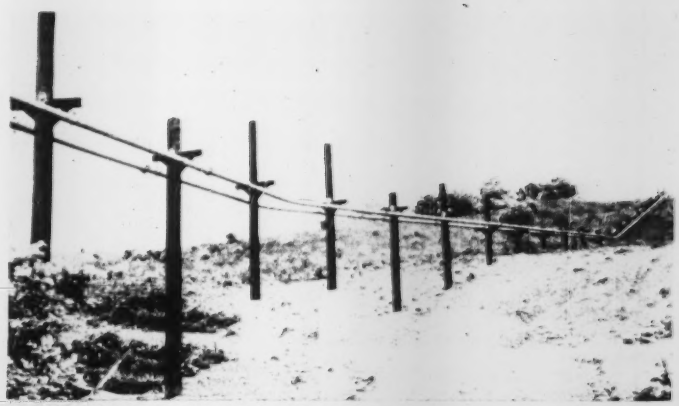
This pumping system is in duplicate so that—in event of mechanical or electrical failure in one pipeline—the waste disposal facility can continue to operate through the other independent pipeline system.

If a complete power failure should occur, air-actuated dumping valves will permit the sludge to discharge from the thickener directly into a small emergency lagoon.

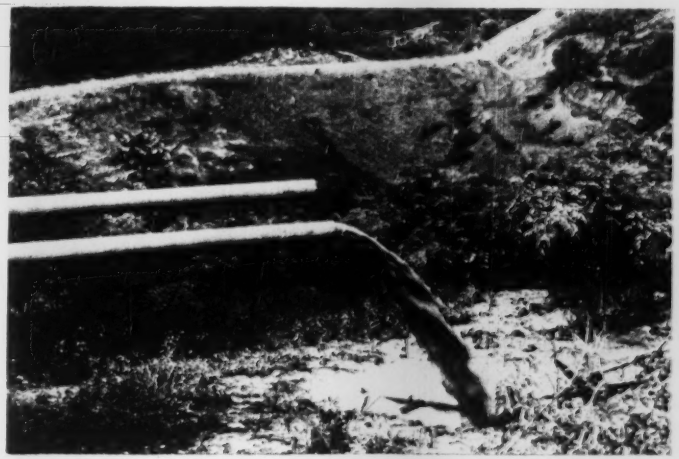
• **A pumping problem**—To move the abrasive slurry continuously through a mile pipeline called for careful selec-



3 FORCED BY six rubber-lined pumps in series . . .



4 THROUGH a four-inch mile-long tower-supported pipe line (one is a standby) to . . .



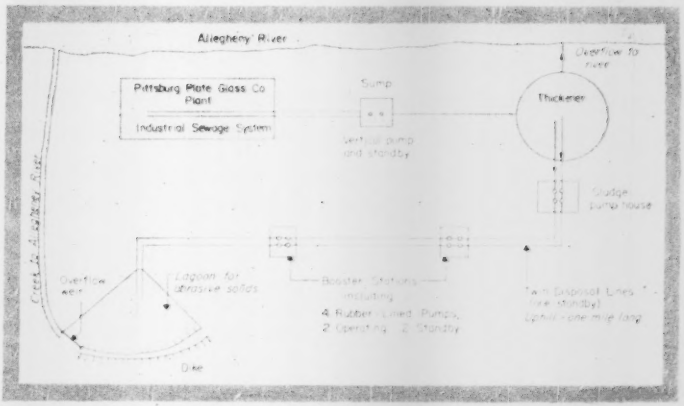
5 A LAGOON formed by damming a natural hollow. Settled effluent overflows to the Allegheny River.

tion of pumps. It was obvious that the slurry would soon wear out the impellers and stationary side plates unless special protection was provided. Also, it would endanger the shaft by leaking through the clearance between the rotating impeller and the side plate into the stuffing box.

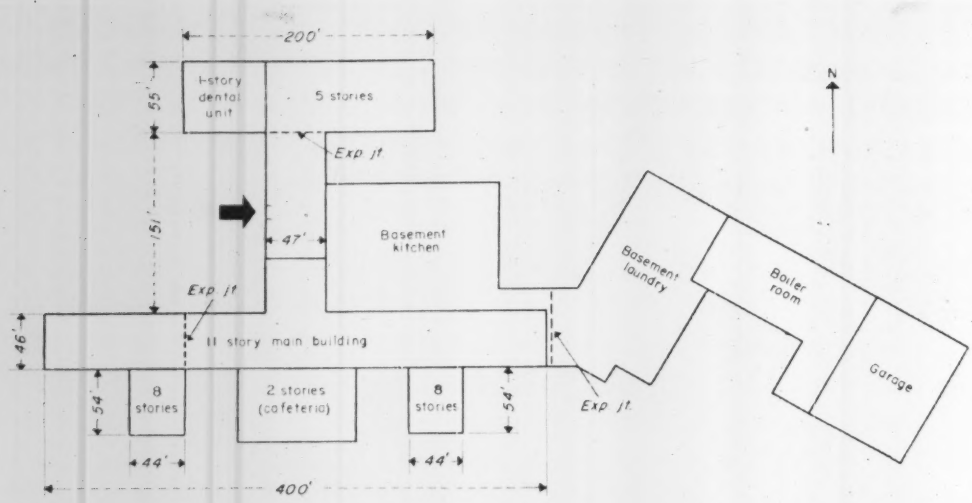
This problem was solved by installing six rubber-lined slurry pumps. In these units all surfaces that come into contact with the liquid being pumped are made of or covered with rubber. Rubber, according to the pump manufacturer, will out-live metal parts at least four to six times.

Leakage of the slurry into the stuffing box is prevented by introducing a very small quantity of clear water into clearances between the rotating impeller and stationary side plate of the pumps. Delivered at a pressure slightly higher than that of the pump discharge, it prevents abrasive slurry from entering the stuffing box.

• **Credits**—The waste-disposal plant was built by The Rust Engineering Co. of Pittsburgh who were assisted by the Dravo Corporation in the design and selection of the sludge-pumping equipment. The rubber-lined pumps were furnished by Allen-Sherman-Hoff Company of Philadelphia.



6 ABRASIVE WASTES from glass manufacturing are thickened and pumped to a high-level disposal lagoon. Duplicate pipelines and pumps insure continuous operation.



LAYOUT OF VA HOSPITAL at Wilkes-Barre, Pa.—Main wing extends east and west, with service wing on east; entrance is on west.

Services Integrated in Hospital Design

Paul A. Kelly
Kelly & Gruzen, Architects-Engineers
New York, N. Y.

Most hospitals are a maze of plumbing, heating, ventilating, air-conditioning and electrical services. The problem, too often, is to keep the ductwork and piping hidden from view, without increasing the size of the building and marring the appearance of rooms. But the designers of the 500-bed Veterans Administration hospital at Wilkes-Barre, Pa., found some convenient solutions.

(1) Plumbing risers for the toilets and lavatories in each room were placed in continuous vertical shafts within the toilet partition walls.

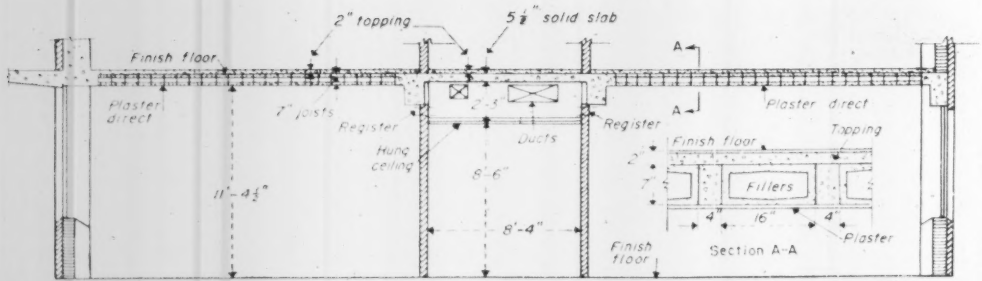
(2) Steam risers for room heating fixtures were located alongside the exterior columns. Pipes and columns were enclosed by furring into the rooms, but this is not objectionable since the columns are in the corners.

(3) Air-conditioning and ventilation ducts have centrally located risers, with horizontal runs over the suspended ceilings in the corridors. Air conditioning is furnished for special rooms and activities, such as operating, X-ray and allergy rooms.

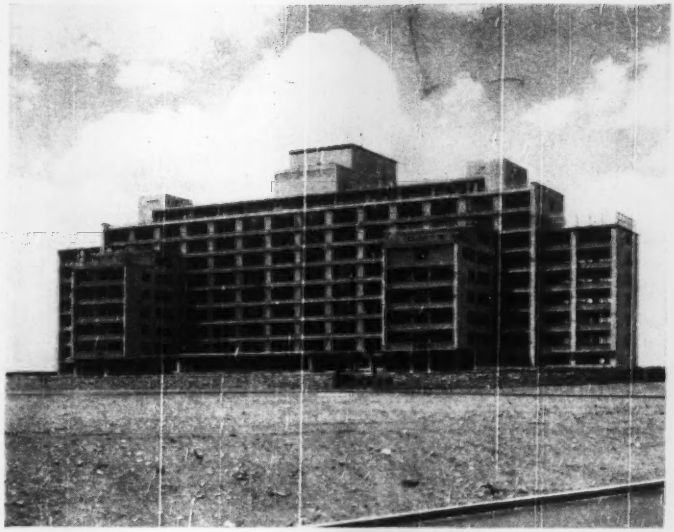
(4) Electrical conduits were placed in the joists. The arrangement is very flexible, especially for rooms where many outlets are required, such as laboratories and X-ray rooms. Vertical runs of conduit were built into the partitions, which were constructed of 4-in. thick concrete block plastered on both sides.

The 11 floors and basement of the main hospital are served by three 4,000-lb, 500 fpm passenger elevators, and one 5,000-lb, 500-fpm service elevator. Provision was made for installing two additional elevators in the future. The north wing has one 4,000-lb, 250 fpm passenger elevator, plus space for an additional elevator.

• **Layout of hospital**—The central part of the building, which is 400 x 46 ft in plan, is 11 stories high, topped



TYPICAL SECTION shows rooms on either side of a central corridor, with ducts in the space between a hung ceiling and solid slab. In the rooms, plaster is applied directly to the underside of the structural slab.



FRAMED in reinforced concrete, faced with brick, building cost over $10,000,000.

by a 2-story penthouse for mechanical equipment. This main wing extends in an east-west direction (see plan).

The building has a reinforced concrete frame. Exteriors are brick, with 8-in. concrete-block backup, around wide, 4-unit aluminum windows. On the south, floors are cantilevered 2 ft 6 in. to form a continuous overhang above the windows.

• **Filler-block floors**—Typical nursing units consist of 17 ft 5 in. to 18 ft 8 in. deep rooms on either side of an 8-ft corridor. Floors in the rooms were designed for a live load of 40 psf, and specifications called for plastering ceilings directly on the slab.

The designers selected reinforced concrete joists with slag block fillers to satisfy these requirements. They found also that this construction is advantageous in limiting sound transmission. Added cost of the fillers was more than offset by the saving in plastering on the underside of the floor.

A typical floor consists of 4-in. wide, 7-in. deep joists separated by 8 x 16-in. by 7-in. deep block, weighing 34 lb apiece. Except for lower story columns of 3,750-psi concrete, structural members were made with 3,000-psi controlled concrete.

Columns are spaced generally about 22 ft apart in the longitudinal direction. They are connected in this direction by 16-in. wide, 20-in. deep beams. The interior face of these beams is flush with the corridor partition and the corridor face of the columns. The beams support the corridor slab and the interior ends of the joists, the outer ends being carried by the spandrel beams.

When it was necessary to plaster on concrete joists wider than 4 in., a retarder was applied to the forms. As a result, a rough surface was obtained, insuring bond between plaster and concrete.

• **Long-span slab in wards**—The 16-bed wards are 40 x 44 ft. Since the wards had to be kept clear of columns, the designers called for a two-way, 10-in. thick structural slab to span the area. When they designed the beams that support the slab, they had to take torsion into account, because of the edge restraint and large span of the slab.

• **Story height kept to minimum**—The 8-ft. corridors were designed for a live load of 60 psf. The designers called for a 5½ in. thick solid slab, and provided a suspended ceiling under it to create a space for air-conditioning ducts and other services.

The corridor construction established floor-to-floor height. For a clear ceiling height of 9 ft 6 in., this worked out to be 11 ft 4½ in.

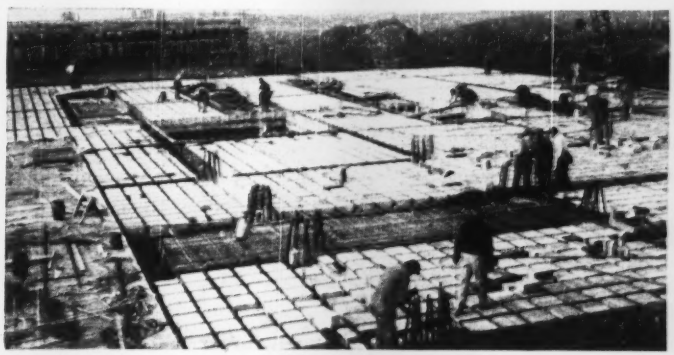
Several different types of construction were considered for the corridor floor, but the solid slab give the minimum story height. The designers estimated that a saving of 6 to 9 in. per story was effected, which, in view of the 11 stories in the building, offered a substantial economy through reduced height of walls, partitions and vertical services.

Over the structural floor, a 2-in. concrete finish was laid to furnish a smooth, level surface for asphalt tile.

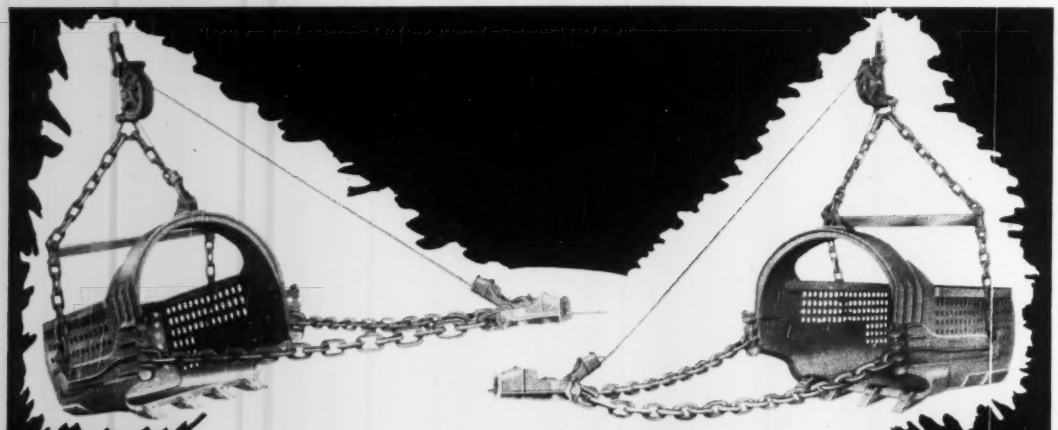
• **Costs**—A $7,674,968 contract for general construction of the Wilkes-Barre hospital was awarded in March, 1948, to Merritt, Chapman & Scott, and the building was completed in July, 1950. Frank A. McBride Co., of Paterson, N. J., held the $1,967,732 heating and plumbing contract, Howard P. Foley Co., of Harrisburg, Pa., the $809,000 electrical contract, Daniel Keating of Philadelphia, Pa., the $309,000 contract for outside utilities and Westinghouse Electric Corp. the $270,390 elevator contract.

Construction costs work out to be $23,610 per bed, $25.95 per sq ft and $2.12 per cu ft. A comparison of these costs with those of other VA hospitals was given in ENR March 17, 1949, p 193.

Construction administration was handled by the Baltimore District, Corps of Engineers. Kelly & Gruzen were the architects, with Isadore Rosenfield as hospital consultant. Severud, Elstad and Krueger were consultants on the structural design, Edward E. Ashley on the mechanical engineering services and Alfred Geiffert & Michael Burris on civil engineering and landscaping.



SLAG BLOCKS are used as fillers in floor between 4-in. wide joists. They soften sound.

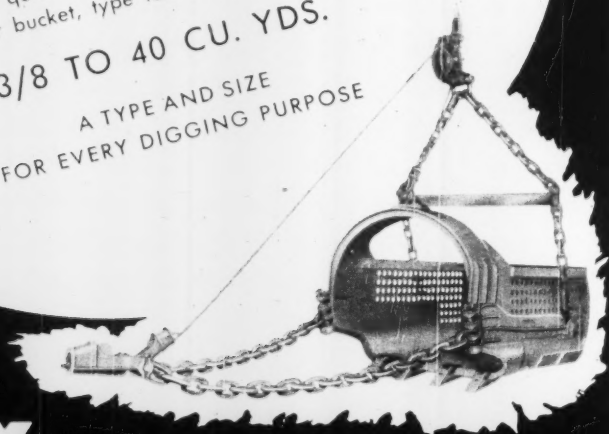


ENDLESS ENDURANCE

Hendrix Dragline Buckets are favorites with owners and operators because of their proven ability TO STAY ON THE JOB! This is the result of expert engineering, superior workmanship, and higher quality materials that go into every Hendrix bucket. Gruelling performance tests in the field prove Hendrix Buckets can stay on the job longer . . . move more dirt quicker . . . produce more profits than any other bucket, type for type or size for size!

3/8 TO 40 CU. YDS.

A TYPE AND SIZE
FOR EVERY DIGGING PURPOSE



HENDRIX *Lightweight* **DRAGLINE BUCKETS**

For descriptive literature ask your dealer or write

HENDRIX MANUFACTURING CO., INC.

MANSFIELD — LOUISIANA

READER COMMENT

More Tests Desirable

Sir: I would like to congratulate Messrs. Morgan and Miller for the objective comparison between conventional horizontal flow and upflow settling basins presented in the June 8, 1950 issue. Relative performance of these types of equipment is one of the most frequently debated questions in water treatment today.

Performance of horizontal flow may be affected considerably by inlet and outlet and baffling arrangements and it would be helpful if the details of the existing basin could have been presented also. I would like to suggest that a repeat series of tests during extreme cold weather would also be of great interest.

The authors indicate that construction cost of the upflow basin is substantially less than that for equal capacity horizontal-flow basins with mechanical sludge removal. Where the basin is used for coagulation only and no softening is attempted, the need of justification for mechanical removal of sludge is not apparent. Without the mechanical sludge removal equipment, the overall costs would probably be more nearly equal.

RICHARD HAZEN
Malcolm Pirnie Engineers
New York, N. Y.

Rigid Frames May Be Cheaper

Sirs: In the comparison of costs of four types of roof framing presented on p 59 of the April 20 issue, the article stated that for a building 68 x 112 ft estimated costs of a rigid-frame structure exceeded the costs of beam-and-column construction by 36½c per sq ft of floor area. It specified that purlins, wall frames, etc., were identical for either beam-and-column or rigid-frame construction. Therefore, the difference in cost of 36½c per sq ft represented simply the increased cost of six rigid-frame bents as compared to six beam-and-column bents—or $463.31 additional for each rigid-frame bent of 68-ft span.

Considering the lighter weight of the rigid frames as compared to the beam-and-column bents described in the article, this difference of $463.31 would indicate an increase in costs for the somewhat more complicated rigid-frame fabrication of 6.7c per lb. Personally, I have never seen bids indicating anything like a 6.7c per lb premium for the fabrication of well designed rigid frames as compared to beam-and-column bents.

In view of the above figures, it is of interest to consider bids recently received in Omaha, Neb., for a gymnasium to be built at Moorhead, Iowa. This gymnasium was designed for the Moorhead Iowa Independent School District by James E. Loftus, Omaha architect, with rigid frames of 71-ft. 4-in. span and 17-ft. 7-in. spacing. Each frame weighed 8,933 lb including stiffeners, splices and braces to inner flange. The low bid was 9c per lb, or $803.97 per frame. The second low bid was less than 4% higher. The low bid modestly was 42.9% less than the low bid for a rigid frame of a material other than steel.

If the Moorhead gymnasium had been designed on the basis of beam-and-column framing, the weight per bent would have been about 10,000 lb. If a saving of 36½ c per sq ft of floor area were to be achieved by this beam-and-column construction, the steel bid could not have exceeded 3.46c per lb—which is about 75% of the mill price for plain material delivered in Omaha. Thus, it is seen that, for the Moorhead project, savings indicated by the article through the use of beam-and-column framing would have been impossible.

The steel rigid-frame design prepared by Mr. Loftus provided not only lower masonry costs due to reduced sidewall heights, better appearance and more desirable headroom, but also a very low steel cost. This project is only one of many where steel rigid frames have proved a wise selection. It is used as an example in this case because the span, spacing and loading conditions are similar to those outlined in the article.

The conclusion was made in the article that: "On a price basis, rigid-frame design cannot compete with standard framing for small buildings." This statement is completely misleading, because by careful design and special attention to details of fabrication, it is often possible to reduce rigid-frame costs for small buildings below that of any other type of construction. Proof of this last statement is evident in the fact that so many fabricators of the highly competitive, small standard buildings have recently devoted their greatest efforts to rigid-frame construction.

An architect or engineer should carefully consider the circumstances involved in any particular roof structure before deciding for or against trusses, rigid frames or simple beams.

JOHN D. GRIFFITHS
District Engineer
American Institute of Steel Construction
Omaha, Neb.

SISALKRAFT
CURING BLANKETS
FOR MORE THAN 20 YEARS
Designed • Developed
Proven
BY ROADBUILDERS

THE SISALKRAFT METHOD ASSURES

✓ Lowest possible final curing cost and best curing results.

✓ Fifteen re-uses, or more.

✓ The only waterproof, reinforced paper designed EXCLUSIVELY to withstand rugged job-handling.

WRITE TODAY FOR THIS VALUABLE 26-Page BOOK ... no charge

The SISALKRAFT Co., Dept. ENR8,
205 W. Wacker Drive, Chicago 6, Illinois
Please send the SISALKRAFT ROAD BOOK to:

NAME

FIRM NAME

ADDRESS

CITY, ZONE and STATE

THE SISALKRAFT CO.
Chicago 6 • New York 17 • San Francisco 5

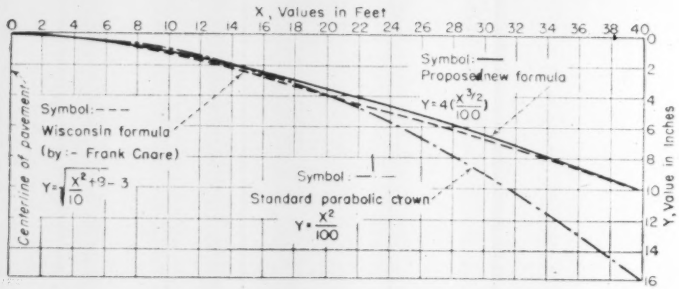
When you're running into piles of difficulty, here's the extractor you always can depend on. It has the extra power, the extra ruggedness, speed and efficiency to extract any type of pile and to pull you through a difficult project on schedule. It's really a time saver. And remember . . . time saved is money saved.

The Vulcan Pile Extractor is simple in construction and easy to operate. It is built in three sizes for all extracting purposes—No. 200 for smaller work, No. 400 for heavier jobs and No. 800 for really tough jobs.

Write for complete details on the pile extractor that has proved itself in the field since 1927.

VULCAN IRON WORKS
Since 1852
331 North Bell Avenue
Chicago 12 ---Illinois

FIELD AND OFFICE


X, Values in Feet
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40
Centerline of pavement
Y, Value in Inches
0 2 4 6 8 10 12 14 16
Symbol:—
Proposed new formula
$Y=4\left(\frac{X^{3/2}}{100}\right)$
Symbol:– – –
Wisconsin formula
(by:- Frank Cnare)
$Y=\sqrt{\frac{X^2}{10}+9}-3$
Symbol: — —
Standard parabolic crown
$Y=\frac{X^2}{100}$

PAVEMENT CROWNS produced by the usual parabolic formula, the Wisconsin formula and the proposed new formula.

Simplified Crown Formula

For many years the standard details of major highway departments have provided that transverse sections of concrete pavements be shaped in accordance with the parabolic crown formula:

$$y = \frac{x^2}{100}$$

where y is the crown in inches at any given point and x the distance measured in feet from the centerline to the point to be computed. This formula produces over-sufficient crown, as it sets up an abrupt break near the curb and gutter. Concrete pavements require but a minimum of crown; maximums can cause dangerous transverse slippage under icy conditions.

Some years ago the Wisconsin Commission adopted a formula computed by their design engineer, Frank Cnare, where:

$$y = \sqrt{\frac{x^2}{10} + 9} - 3$$

This formula is a great improvement over those previously employed.

But the following formula produces a more normal crown and is more rapid in calculating, by substituting the values of x to the three-halves power in the formula:

$$y = 4\left(\frac{x^{3/2}}{100}\right)$$

Aromal F. Faga
Adair, Iowa

Bridge Repair with LCT

Considerable savings in bridge-maintenance costs are being obtained by the South Carolina Highway Department with a converted LCT.

Superstructure of the LCT was removed, the deck remodeled and outfitted with necessary machinery for bridge repair. A convertible type derrick was installed so that it could be used for driving piles. To complete the LCT a cabin room was outfitted for use of the maintenance crew.

In the low country of South Carolina are numerous wooden bridges, many with draw spans to accommodate river traffic. In the past, repair to bridge tenders and piers had proved a costly problem.

Maintenance required the shipment of equipment and materials or the use of specially constructed barges and boats.

With the converted LCT the maintenance department is able, at low cost, to travel its water highways with all necessary equipment and materials for maintenance.

Telescopic Light Tower

A portable telescopic flood-lighting unit, suitable for use in night-time construction, consists of four telescoping 5-ft. steel pipe sections. The largest section is 5 in. in diameter. A rack and pinion welded to the inner three sections allows the pipes to be cranked to an extended length of 30 ft.

The sections can be locked at any height, and then the handle can be withdrawn.

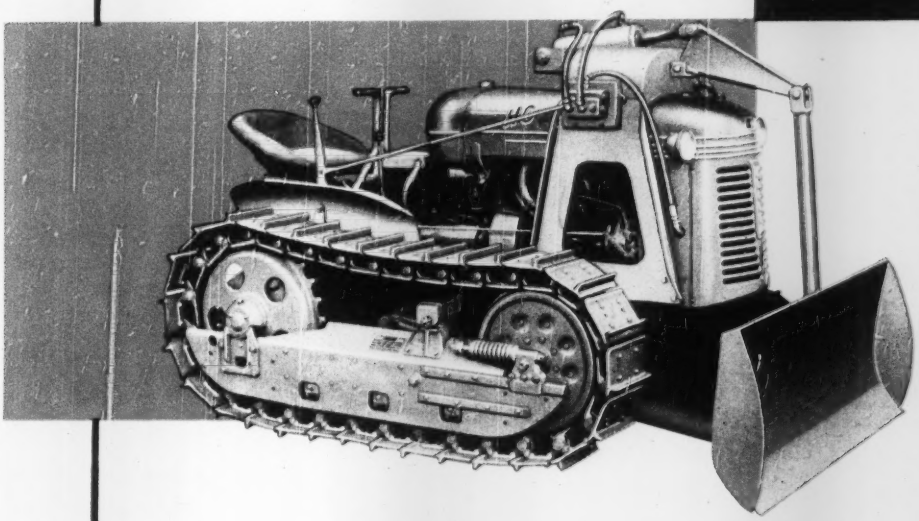
The outer pipe section has four steel brackets welded to a small platform and to a point at mid-section of the pipe.

Collapsible supporting legs that bolt against the outside pipe can be extended for support. Each leg is independent, permitting the flood-light unit to be set up straight on uneven ground.

An ordinary reflector head is attached to the last section. When collapsed the unit measures about 6 in. x 6 in. x 10 ft. It was developed by the Army Engineers at Ft. Belvoir, Va.

More *strength . . .* **More** *power . . .* **More** *everything*

..in the NEW OLIVER "HG"



There's *more* of everything you want in a crawler tractor in the NEW Oliver Model "HG." This new little crawler tractor is "big" with performance-making features because it was *field designed* . . . designed to meet the specifications that users said they wanted.

The NEW OLIVER "HG" Has More Strength

To handle the extra load and strains of mounted equipment, the main frame, transmission case and drawbar bracket assembly have been materially strengthened. No loads are imposed on final drive spacer casting. Power take-off is heavier . . . stronger.

Front wheels have been increased 50% in material thickness for longer life. Wheel flanges are on the outside of the track rails for better track alignment. New, heavier type track frame guide supports and buffer springs add strength to handle mounted equipment.

Final drive has been redesigned for greater physical strength and durability.

The NEW OLIVER "HG" Has More Power

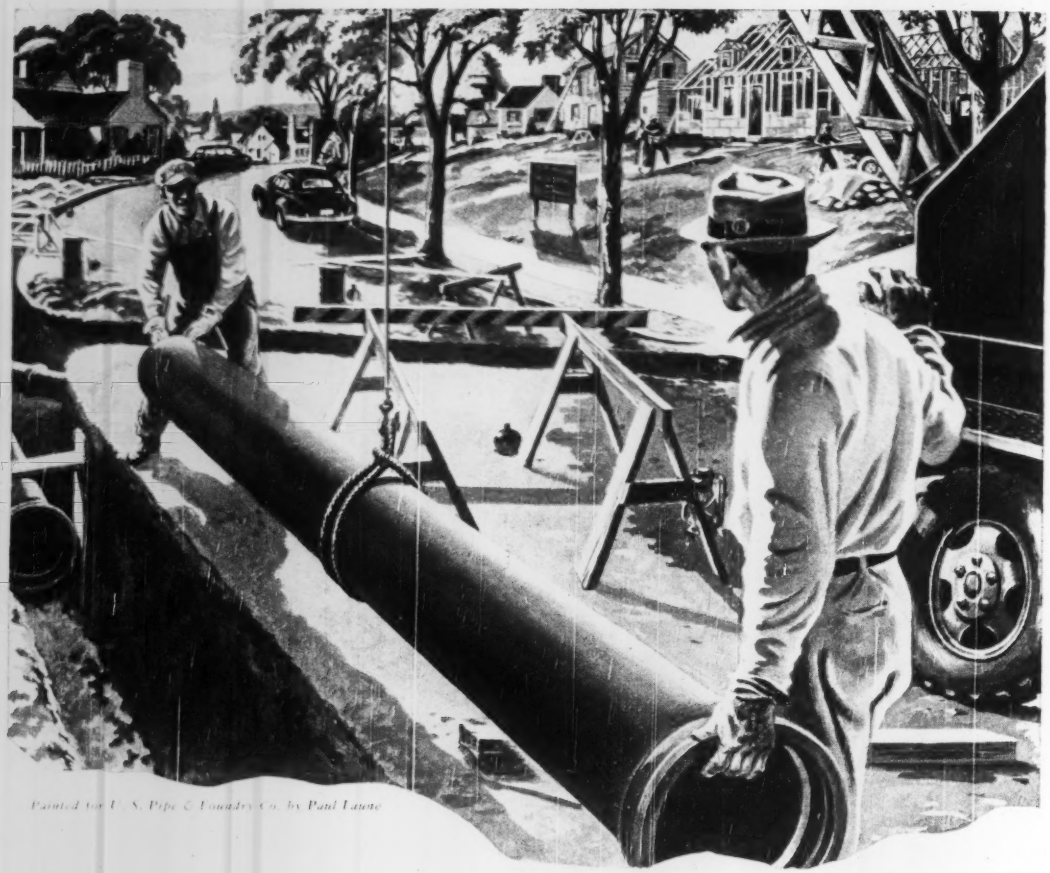
The new "HG" engine gives you more drawbar horsepower . . . extra power to handle bigger loads . . . extra efficiency.

Check the new Oliver "HG" at your Oliver Industrial Distributor's now. It's the biggest little tractor you've ever seen.

THE OLIVER CORPORATION

Industrial Division: 19300 Euclid Avenue, Cleveland 17, Ohio

A complete line of industrial wheel and crawler tractors

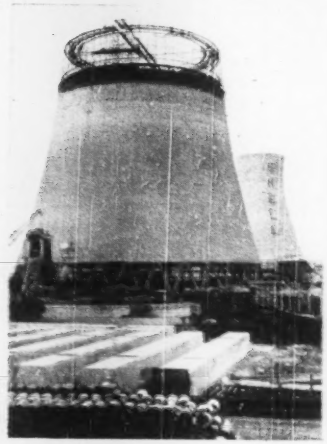


Painted for U. S. Pipe & Foundry Co. by Paul Laune

There's a solid satisfaction in specifying cast iron pipe. You know that your choice coincides with the judgment of leaders of your profession the world over. And when the line is backfilled, you are confident that it will serve throughout a long life at a low annual maintenance cost. This has been true of cast iron pipe for centuries; yet in the fifty-one years since our Company was founded, notable advances in manufacturing methods and controls have been made, resulting in a finer, more uniform pipe. United States Pipe and Foundry Company, General Offices: Burlington, N. J. Plants and Sales Offices Throughout U. S. A.

U.S.
cast iron
PIPE
FOR WATER, GAS, SEWERAGE AND INDUSTRIAL SERVICE

DEVELOPMENTS ABROAD



TALLEST COOLING TOWER—The world's largest concrete cooling tower, rising to a height of 341 ft. 6 in. from ground level, will dominate the site of Shell's new Stanlow refinery, now under construction at Ellesmere Port, Cheshire, on the Manchester Ship Canal. Shaped like the top of a huge milk bottle, the tower in operation will deal with 5,000,000 gal. of water an hour, which will be used for cooling purposes in the refinery processes. At its base the tower measures 222 ft. in diameter, reducing to 168 ft. at the neck and widening again to 177 ft. at the top. More than 500 tons of reinforcing steel is being used in the construction. Total weight of the tower will exceed 20,000 tons.

Huge steel mill near Rio to double capacity

Brazil will need U. S. services and machinery. Export-Import Bank announces loan of $25,000,000.

To implement Brazilian government plans to double the capacity of the huge Volta Redonda steel plant near Rio de Janeiro, the Export-Import Bank last week announced approval of a $25,000,000 credit.

The financing, to be made available to the Companhia Siderurgica Nacional (National Steel Company) is to assist the company in purchasing and transporting U. S. machinery, equipment, services and supplies for expanding the plant. Completed late in 1946, after war-slowed construction that spread over nearly four years, the plant is now reported to be turning out very nearly its 548,000 tons of steel ingots annually.

The expansion program is designed to increase the ingot capacity to 662,000 tons annually through the erection of a second blast furnace and two open-hearth furnaces. The improvements will also raise the finished steel product from 301,000 tons each year to 467,000. An electrolytic tinning line and more rolling equipment are included in the expansion plans.

Gen. Raulino Oliveira—government-appointed president of the steel company—said that no orders had been placed as yet for the equipment and supplies, pending final signing of loan agreements. Despite the uncertainty of the U. S. steel position at the moment, he expressed confidence he can obtain the machinery required in this country.

The credit will be the second granted for the Volta Redonda project in nine years. The first was a $45,000,000 line of credit extended in 1941-42 for initial purchases and construction. Construction was finally completed and the plant put into operation late in 1946, after three U. S. firms—Arthur G. McKee Co., Koppers Co. and Freyn Engineering Co.—had collaborated on its design and construction and assisted Brazilian engineers in the work.

The company itself is a peculiar organization by U. S. Standards—it is a "mixed company" with capital supplied both by the Brazilian government and by private investors. Although the private share of the more than $80,000,000 represented by the plant and its subsidiary coal and ore mines, transport systems and the like is small, company directors are elected by general vote of all stockholders. The president, however, is named by the President of Brazil.

Commenting on the new credit, Ex-Im officials said that in the three years since it started to pay off its amortization on the original credit, the Brazilian company has paid off a total of about $4,700,000.

Australia now to have aluminum post offices

Australia, already the biggest customer for aluminum schools built by Britain's Bristol Aeroplane Co., is soon to have aluminum post offices, too.

The Postmaster-General of Australia has placed a contract with Bristol for 50 buildings of different sizes.

The Commonwealth has on order 330 Bristol aluminum schools; the first have already been erected and many more are on the way.

Hospitals may be next. Members of the New South Wales Hospital Commission have visited and inspected a number of aluminum buildings already in use in Britain.

MUNICIPAL AND RURAL SANITATION
New Fourth Edition

1. A thorough and up-to-date treatment of the principles and practices of public health engineering. Includes fundamentals of disease communication and its control, and describes sanitary control measures applying to a wide variety of situations with which you must cope. By V. Ehlers and E. Steel. 530 pages, 144 illus., $6.50.

WATER SUPPLY ENGINEERING

2. New 4th edition emphasizing practical applications of water supply engineering, including latest developments in the field. The book covers finance, hydraulics, pumping machinery, electrical equipment, and water purification, etc. Materials for and the design of pipes, valves, gates, hydrants, and meters are discussed. By H. Babbitt and J. Doland. 632 pages, 258 illus., $6.50.

PIPING HANDBOOK

3. This vast compilation of data and methods for effective use of piping puts at your fingertips up-to-date information covering the design, construction, and use of piping systems. Any fact, on any phase of piping practice, is here in clear, dependable, ready-to-use form. Fourth edition. By S. Crocker. 1576 pages, 934 illus., $7.50.

ELEMENTARY STRUCTURAL ANALYSIS

4. Presents basic structural theory, emphasizing knowledge of strength of materials, and including the elements of statically indeterminate structures. Covers shear and bending moment, trusses, deflections of structures, etc. By J. Wilbur and C. Norris. 532 pages, 354 illus., $6.00.

McGRAW-HILL

SEE THESE BOOKS 10 DAYS FREE

McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 18

Send me book(s) corresponding to numbers circled below for 10 days' examination on approval. In 10 days I will remit for book(s) I keep, plus few cents for delivery, and return unwanted book(s) postpaid. (We pay for delivery if remittance with this coupon; same refund privilege.)

1 2 3 4

Name
Address
City Zone State
Company
Position
This offer applies to U. S. only.

A 10' X 12'
LOW COST
STEEL BUILDING
OF
1,000 USES

Portable or Permanent
USF
HANDY-HUT
No Field Welding or Riveting
2 Men Can Erect
Expansible!

Just the ticket for a field office, tool house, storage house, pump house or any one of a thousand uses for contractors and engineers. The USF Handy-Hut is an all-steel, prefabricated formed steel frame that simply bolts together with box corrugated roofing and siding sheets that attach with clip-and-wedge fasteners. No special tools are needed, no field punching, welding or riveting is required. Meets fire and windage codes most localities and is suitable for either permanent or portable use. Multiple units may be erected to accommodate any size requirement without special engineering.

USF also produces larger steel buildings of the same general construction in 10' and 12' clear heights with 26' or 30' span widths for erection in length multiples of 13'-4" to any desired size.

WRITE FOR DATA

USF United Steel Fabricators, Inc.
WOOSTER, OHIO

MUNICIPAL AFFAIRS

PHOENIX, A CITY OF SUNSHINE—According to the U. S. Weather Bureau, Phoenix, Ariz., has more sunshine than any other city in the United States. The city's economy depends mainly on tourists and agriculture, and they in turn depend mainly on the sun. Phoenix is one of the fastest growing cities in the country. Its population has quadrupled in 20 years and is now almost a quarter of a million. To keep pace with this growth, the city is constantly expanding its municipal utilities and its housing facilities for seasonal guests and permanent residents. Engineers and contractors are constantly busy in keeping up with the development of the community.

An 8,800-ft runway is started at Portland, Ore.

Construction has been started at the Portland, Ore., airport on a new 8,800-ft runway which will provide facilities for airliners making the Pacific Northeast-Hawaii run.

Landing surface on the runway will be 200 ft wide, with 150-ft turf shoulders on each side, making a total width of 500 ft. The first 1,000 ft, where most of the landings by heavy craft will be made, will have a depth of 24 in, with a thickness of 21 in, in most of the length of the runway.

The 24-in section will be constructed on the following specifications: granular sub base, 9 in; aggregate base, 10 in; crushed rock leveling, 2 in; asphaltic concrete surface, 3 in. When soil conditions so require, the granular sub base will be increased.

The runway will have sufficient strength for a loading of 100,000 lbs on a single wheel, or 125,000 lbs on dual wheels, with 250,000 lb capacity for multi-gear planes.

Plans and specifications were drawn by the engineering firm of John W. Cunningham and Associates, Portland, and the $1,500,000 contract is held by Warren Northwest, Inc.

The contractors will be required to move 240,000 cu yd of sand and top soil to make way for the foundation. For the sub base, 130,000 cu yd of material will be required, and the bituminous surface will need 46,000 tons of asphaltic concrete.

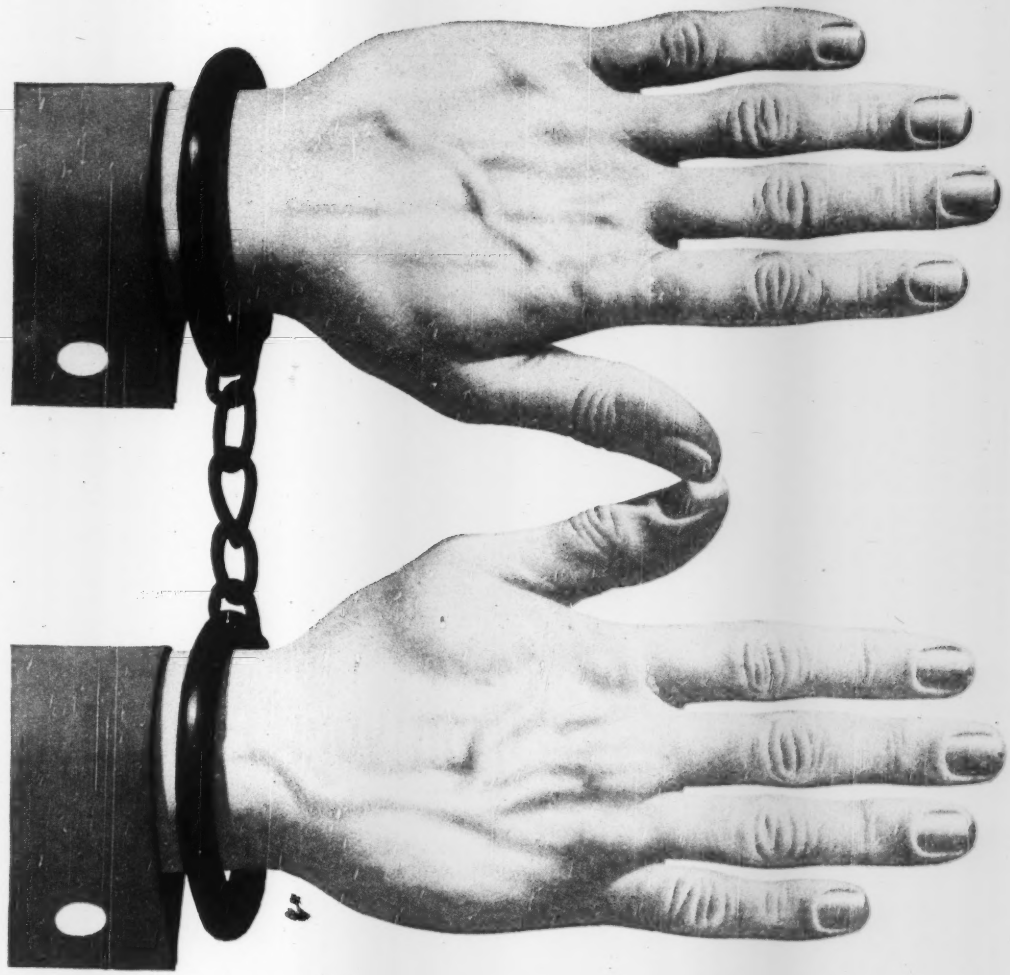
The Port of Portland is paying $1,100,000 of the total cost of the airport revision, with the balance coming from the federal government.

Although the runway is being constructed especially to accommodate transocean traffic, it will be available to all commercial planes using the airport. Completion of the project is set for November.

Building Codes

Youngstown, Ohio—Mayor Charles P. Henderson has submitted to city council a proposed building code with regulations patterned after nationally recognized standards. It was drafted by a committee which began its work three years and a half ago. The city's building code has not been revised now for about 22 years.

Newark, N. J.—The Mayor's fact finding committee on building conditions has turned in a 58-page report which recommends building code revision as one answer to high construction costs in Newark which are hindering the building business there.



Lay-ups got you handcuffed?

MISTER, if that's you in the handcuffs above, Quaker State HD Oil will help you slip out of them.

To keep lay-up time at a minimum, keep *engine wear* at a minimum...with Quaker State HD Oil. Made from 100% pure Pennsylvania grade crude oil, it is refined with the most modern processing equipment and with technical skill unsurpassed in the industry. Quaker State HD Oil is compounded with chemical detergents of highest quality.

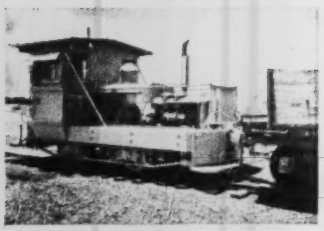
Even under toughest operating conditions, it keeps its body, lubricates thoroughly, protects every friction surface. It helps prevent formation of sludge, gum, or varnish — actually *cleans* as it lubricates!

There's no finer engine lubricant than Quaker State HD Oil. Change to it now!

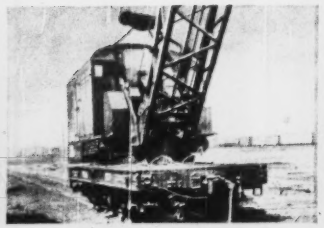
QUAKER STATE HD OIL
AND SUPERFINE LUBRICANTS

Use Quaker State HD Oil for trucks, buses, taxis, tractors.
Use Quaker State Motor Oil for passenger cars.

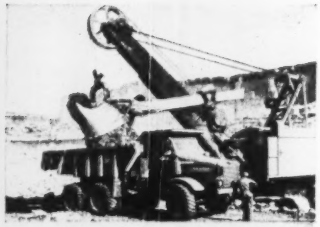
QUAKER STATE OIL REFINING CORPORATION, OIL CITY, PA.



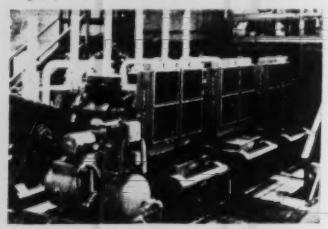
LOCOMOTIVES—Repowered with GM Diesel Torque Converter unit, this 20-ton locomotive hauls double the tonnage without ever shifting into low gear.



HOISTING—Converted from steam to GM Diesel Torque Converter power—estimated operating savings will pay repowering and overhaul cost in less than two years.



EARTH MOVING—Two 190 H. P. GM Diesel Torque Converter units give 34-ton Euclid 1-FFD rear dump a speed of 25.4 m.p.h. with full load.



DRILLING—"½ faster than with original engines," says owner of rig repowered with 3 GM "Twin" Diesel Torque Converter units.

LOGGING—Powered with GM Diesel Torque Converter unit, this Washington Iron Works yarder has yarded 140,000 bd. ft. per day.

WRITE FOR YOUR COPY

of 24-page illustrated catalog giving full details on design, operation and application of "The NEW General Motors Diesel Engine-Torque Converter Unit."

How to Get MORE WORK from your Equipment

Operators in every field report they get more work done in less time at lower cost with equipment powered by General Motors Diesel Engine-Torque Converter units.

The combination of a GM Diesel engine with an integrally built torque converter and fluid coupling provides a compact power unit which makes available maximum engine horsepower and torque regardless of the speed of the load. It delivers high torque for starting heavy loads and *automatically* shifts to fluid coupling when load requirements equal engine torque. Gear shifting is cut to a minimum —often eliminated. Smooth transmission of power through a fluid, protects both engine and driven machinery from sudden shock loads—prevents engine stalling under any load condition.

These efficient Diesel Engine-Torque converter units are available with 3-, 4-, and 6-cylinder engines, Twin 4 and Twin 6 multiple engines, rated at 64 to 294 B.H.P. See your GM Diesel distributor or write us for further information.

DETROIT DIESEL ENGINE DIVISION

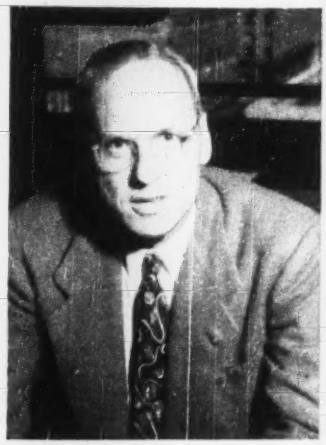
SINGLE ENGINES . . . Up to 275 H. P. **DETROIT 28, MICHIGAN** MULTIPLE UNITS . . . Up to 800 H. P.

GENERAL MOTORS

GM GENERAL MOTORS DIESEL POWER

DIESEL BRAWN WITHOUT THE BULK

MEN AND JOBS



H. R. Norman, chief of the engineering division of the Galveston, Tex., division, Corps of Engineers, has resigned to become a consulting engineer in Houston.

Frank D. Sleeper has been appointed division engineer of the New Hampshire State Highway Department, with headquarters at Laconia. He joined the department in 1919 and has lately been assistant division engineer. **Harry L. Smith,** lately division engineer, who has been with the department 40 years, has been transferred to the right-of-way division.

A. D. Edmonston and **P. H. Van Etten** were recently appointed to the permanent positions of state engineer and assistant state engineer, respectively, in the California Department of Public Works. Edmonston, who has been acting as state engineer since the retirement of Edward Hyatt on Jan. 11, has been in state employment since 1924. He was appointed assistant state engineer in 1945. Van Etten was promoted from principal hydraulic engineer of the Division of Water Resources to acting assistant state engineer.

Robert B. Carroll, Princeton, Ind., has been named engineer to head the recently created redevelopment program for Hamilton, Ohio. He also will serve as traffic engineer for the city.

Columbus, Ohio, city council has created a new division of sewerage and drainage, combining the old division of sewers and drains and division of sewage treatment. It will be headed by **Orris Bonney**, former chief deputy engineer in charge of sewers.

Robert Bowman, Findlay, Ohio, has been named to the newly created post of superintendent of waterworks and sewage treatment in Newark, Ohio.

Wilbur G. Heer, for the past five years Sixth Division materials engineer for the Kansas Highway Department, at Garden City, has been appointed highway equipment superintendent for the Kansas Highway Commission.

County Road Engineer Orel E. Lewis has completed his probationary period satisfactorily, and has been hired permanently by the Siskiyou County, Calif., board of supervisors.

Francis J. Magnuson, assistant superintendent of construction and repair for St. Paul, Minn., has been appointed city engineer of New Ulm, Minn. He joined the St. Paul public works department in 1923. In 1944 he became city engineer of Rochester, Minn.; after two years he went into private consulting work in St. Paul, and in 1949 rejoined the department.

Robert C. Cutting, civil engineer with the New Orleans district, U. S. Engineers, since 1931, is retiring after 45 years of service. He served as construction engineer for the Australian government in 1914, and in 1929 was consulting engineer in Europe for the French and Spanish governments, returning in 1931 to New Orleans.

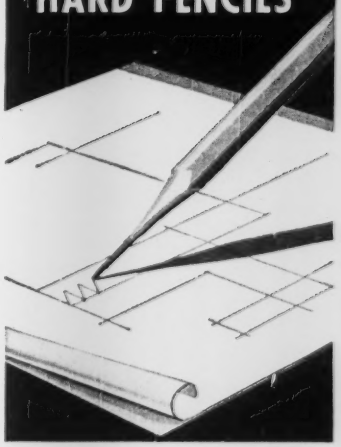
George Morgan has been named manager of the branch office recently opened at 205 Pioneer Building, Lake Charles, La., by the Kansas City Bridge Co. Mr. Morgan has recently served as project manager on the completed substructure for new Calcasieu River Bridge at Lake Charles for the Louisiana Department of Highways.

B. A. Thomas (left) superintendent of the Muirhead Construction Co. is driving the 16-mgd. expansion of the Durham, N. C. water plant towards completion. William Piatt III, mechanical engineer, represents Piatt and Davis, consulting engineers, Durham on the project.

(Continued on page 58)

Imperial

TRACING CLOTH FOR HARD PENCILS



● Imperial Pencil Tracing Cloth has the same superbly uniform cloth foundation and transparency as the world famous Imperial Tracing Cloth. But it is distinguished by its special dull drawing surface, on which hard pencils can be used, giving clean, sharp, opaque, non-smudging lines.

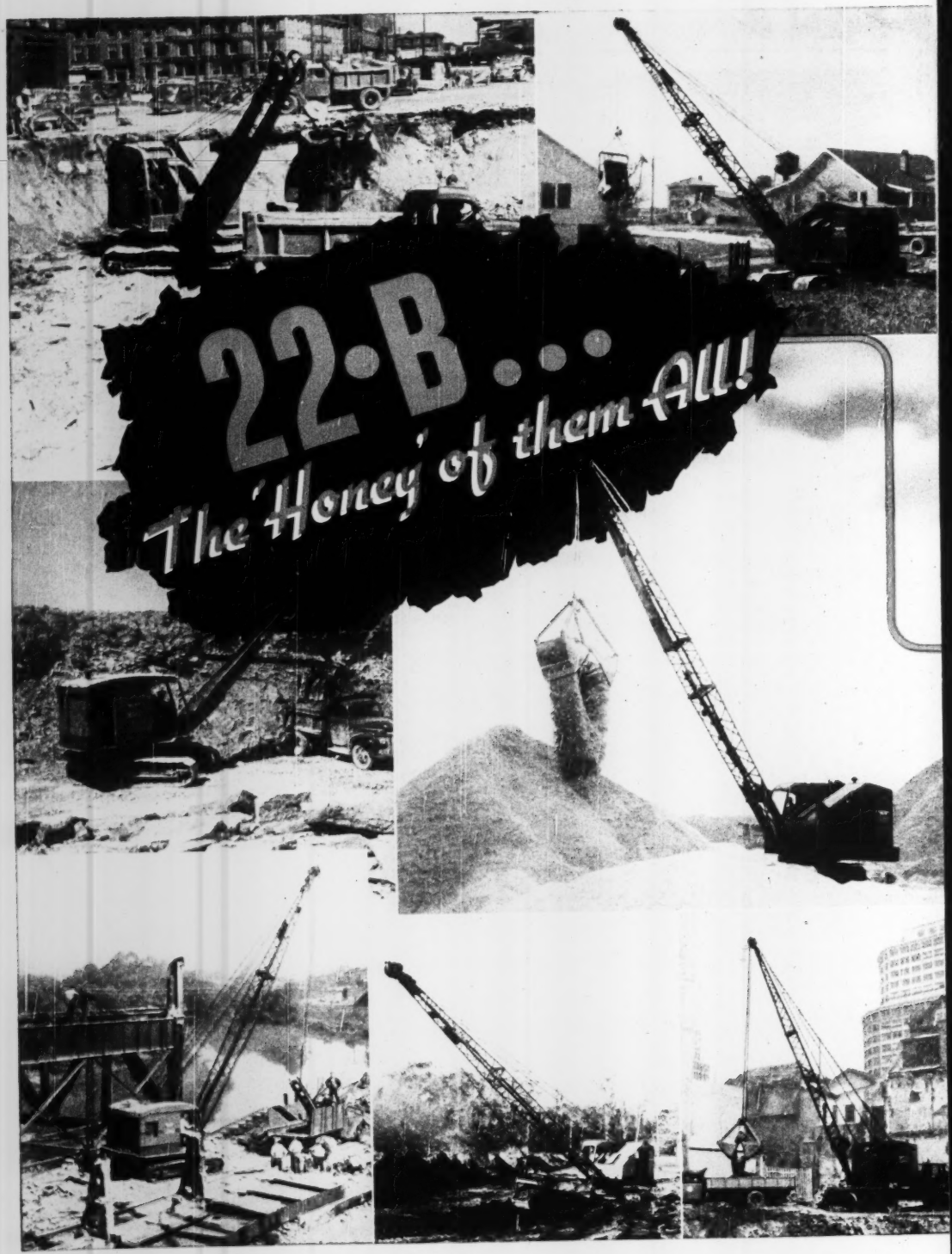
Erasures are made easily, without damage. It gives sharp, contrasting prints of the finest lines. It resists the effects of time and wear, and does not become brittle or opaque.

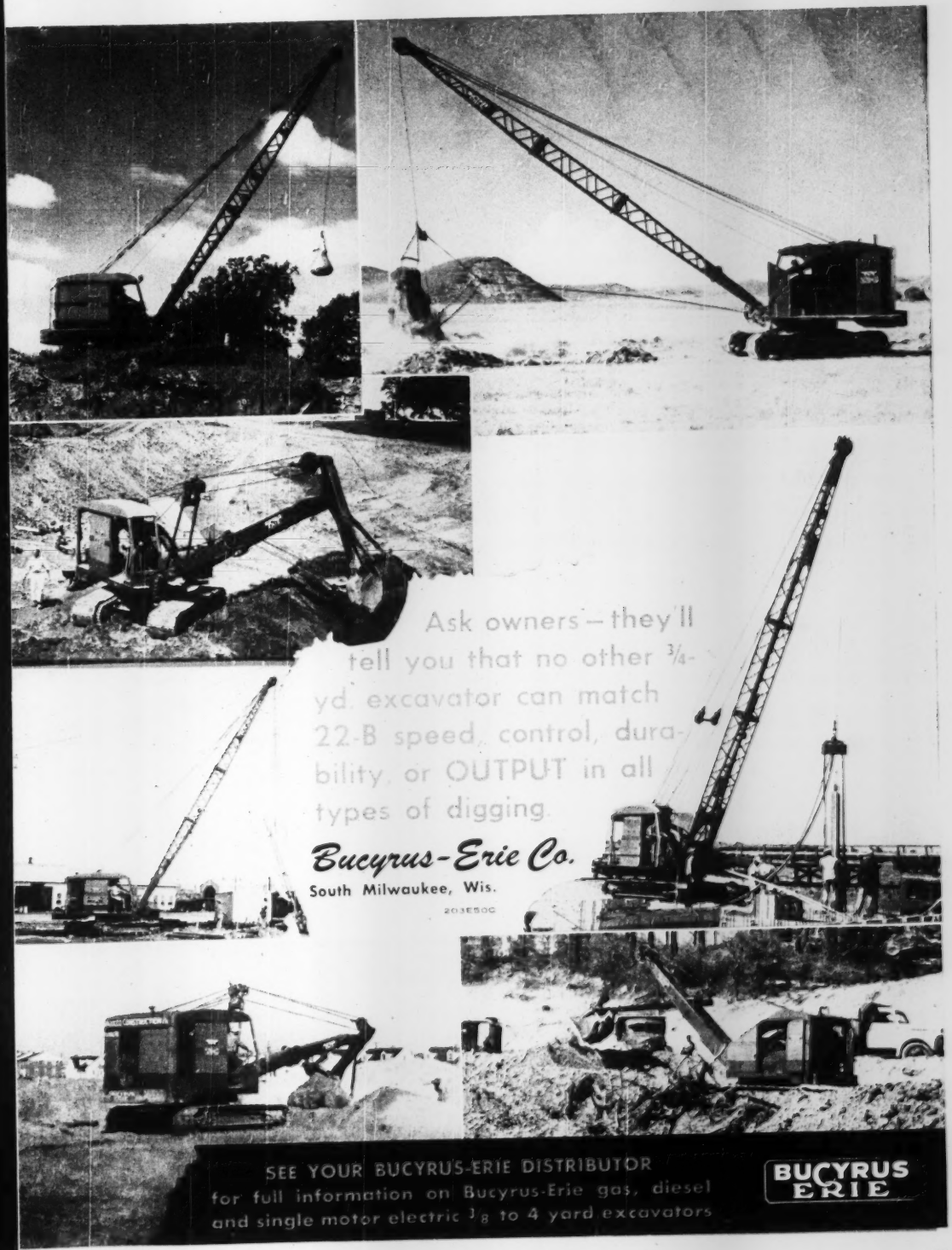
Imperial Pencil Tracing Cloth is right for ink drawings as well.

Imperial

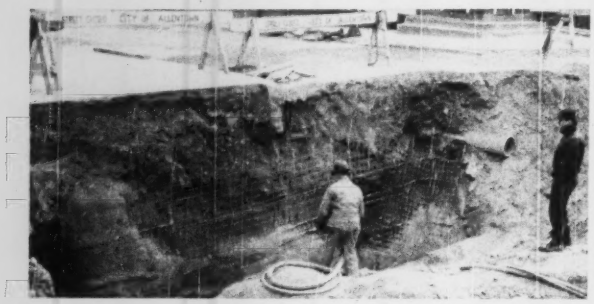
PENCIL TRACING CLOTH

SOLD BY LEADING STATIONERY AND DRAWING MATERIAL DEALERS EVERYWHERE


22-B...
The 'Honey' of them All!


Ask owners—they'll tell you that no other ¾-yd. excavator can match 22-B speed, control, durability, or OUTPUT in all types of digging.
Bucyrus-Erie Co.
South Milwaukee, Wis.
203E50C
SEE YOUR BUCYRUS-ERIE DISTRIBUTOR
for full information on Bucyrus-Erie gas, diesel and single motor electric ⅜ to 4 yard excavators
BUCYRUS ERIE

CAVE-IN HALTED WITH "GUNITE"

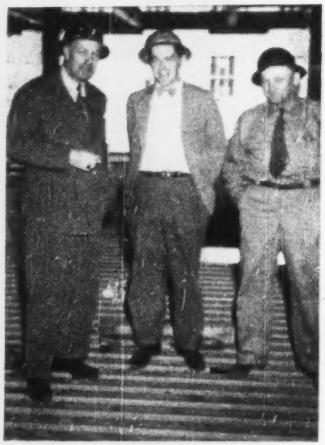


The soil around Allentown, Pennsylvania, is largely limestone. One night, a passing automobile's vibration caused an entire street intersection to cave in over an unsuspected cavity. Gas mains exploded and water lines ruptured. The surge of water from the broken mains ate dangerously into the surrounding soil. Nearby structures were in danger of collapsing. As soon as practicable, one of our crews began the application of reinforced GUNITE over exposed rock surfaces (see photo above) to prevent air slacking and further undermining of the surrounding area. Our knowledge of how to cope with this situation was gained through actual experience in the construction of water tunnels in New York City, Baltimore, Boston, Toronto, as well as in many coal mines.

A completely illustrated catalog describing hundreds of successful GUNITE jobs we have performed is yours for the asking. A request for Bulletin A2400 will bring you a free copy by return mail.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA., U.S.A.
MANUFACTURERS OF THE CEMENT GUN

(Continued from page 55)



Supervising construction of the 26-story office building for Massachusetts Mutual Life Insurance Co.—first skyscraper in New York City with light-gage steel floors (ENR Feb. 14, p 25)—are, left to right, M. H. Parsons, project executive, Turner Construction Co., H. W. Underhill, clerk of the works, Carson & Lundin, architects, and Glenn Hurley, superintendent, H. H. Robertson Co., manufacturer of the decking.

Clifford C. Hull has been appointed commissioner of public works for Fresno County, Calif., by the county board of supervisors. He had served for five months as acting county road commissioner.

William H. Larkin, an associate sanitary engineer in the New York State Department of Health, Albany, has been promoted to chief of the water pollution control section. **Ralph D. Bates** has been temporarily promoted as associate sanitary engineer and assigned as chief of the sewage and waste disposal section of the Dept. of Health.

William M. Lunberg, of Chicago, Ill., has been named assistant planner with the Greensboro, N. C., Planning Department, succeeding **W. C. Dutton, Jr.,** who resigned to join the staff of the planning section of the Knoxville, Tenn., Housing Authority.

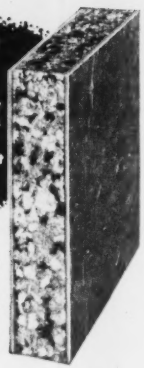
Ransford J. Abbott has been nominated as New Jersey state highway commissioner to succeed **Spencer Miller, Jr.,** resigned. His confirmation is considered assured. Abbott, who served with the Navy in the Pacific during the war, was administrative assistant to former Highway Commissioner F. D. Sterner.

(Continued on page 61)

IRVING GRATINGS
SINCE 1902
★
ALL TYPES
FINE WORKMANSHIP
AND SERVICE
at Competitive prices!
IRVING

SUBWAY GRATING CO., INC.
1 LONG ISLAND CITY, N. Y.
20 OAKLAND, CALIF.
Write for Catalogs and Estimates

NOW!
IMPROVED
KORK-PAK
JOINT FILLER
Insulates against HEAT LOSS!



Specify KORK-PAK Joint Filler for use between floor slabs and footings in basements, houses and structures on grade and get the extra KORK-PAK insulating feature as well as a waterproof, resilient, non-extruding filler that will keep the joint effectively filled at all times.

KORK-PAK is composed of cork granules bonded together with asphalt between two sheets of asphalt-saturated paper. It's waterproof and insect proof to assure positive joint filling for the life of the building.

KORK-PAK is the least expensive non-extruding joint filler made. Low cost, coupled with its high insulation coefficient makes KORK-PAK the ideal joint filler for any type of construction.

SERVICISED QUALITY PRODUCTS 1920

Write for complete details on KORK-PAK. See our Catalog in SWEET'S.

SERVICISED PRODUCTS CORP.
6051 W. 65th ST., CHICAGO 38, ILL.

From mammoth to midget...
according to your requirements
120" Lock Joint Reinforced Concrete Pressure Pipe and 16" Lock Joint Prestressed Concrete Cylinder Pipe

Whether your daily water consumption demands be 3,000,000 gallons or hundreds of times that figure, Lock Joint Pipe Company is prepared to provide a supply line for your requirements.

In the last few years the Company has supplied not only hundreds of miles of large diameter pipe but also more than a million feet of 16" to 24" pipe for municipalities and industry. This has been made possible through the establishment of three permanent manufacturing plants. Lock Joint Concrete Pressure Pipe from 16" to 42" in diameter, produced at these plants, can be shipped economically to all parts of the country —for both major installations and minor extensions.

Our representative will be glad to discuss with you any water supply or transmission project which calls for pressure pipe 16" in diameter or larger. You will find that Lock Joint Concrete Pressure Pipe's superior characteristics of long life, continuous high flow and negligible upkeep will recommend it above all others for any permanent water supply installation.

SCOPE OF SERVICES—Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains in a wide range of diameters as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.

LOCK JOINT PIPE COMPANY

Est. 1905

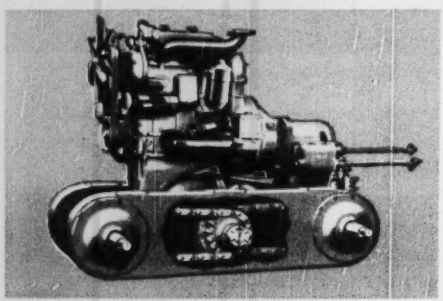
P.O. Box 269, East Orange, N. J.

PRESSURE PIPE PLANTS: Wharton, N. J., Turner, Kan., Detroit, Mich.

BRANCH OFFICES: Cheyenne, Wyo. • Denver, Col. • Kansas City, Mo. Valley Park, Mo. • Chicago, Ill. • Rock Island, Ill. • Wichita, Kan. Kenilworth, N. J. • Hartford, Conn.

LOCK JOINT
Reinforced Concrete
PRESSURE PIPE

Rough, Rugged, Heavy Duty Lubes for every equipment need!



Look over this complete line of all-weather... all-purpose lubricants!

NAME ANY LUBRICATION PROBLEM you can think of! There's the right grade and type of Cities Service lubricant to do a real job for you. This performance-tested line of quality products will help speed your heavy duty operations, cut maintenance costs, prevent equipment breakdowns. Get in touch with the nearest Cities Service office to learn how these high grade lubricants can help you.

- **Trojan All-Weather... All-Purpose Greases**
- **Pacemaker Oils**
- **Trojan Gear Oils**
- **Heavy Duty Motor Oils**

FREE A helpful new booklet—Earth Moving and Construction Machinery lubrication. Above cutaway view is typical of illustrations found in this new 50 page book dealing with proper lubrication in the construction industry. Write today for your copy.

CITIES SERVICE OIL COMPANY
Sixty Wall Tower, Room 665
New York 5, N. Y.

Please send me without obligation your new booklet entitled "Earth Moving and Construction Machinery Lubrication."

Name _____

Company _____

Address _____

City _____ *State* _____

M. A. Dillingham has become chief of the engineering division of the Galveston, Tex., division of the Corps of Engineers. He is a graduate of the University of Missouri school of mines and metallurgy, Rolla, Mo. As head of the Galveston district reports branch, he directed the investigation and planning of flood control, navigation, and allied projects.

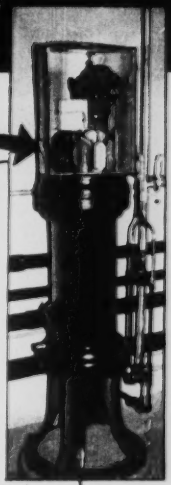
Maj. Harold B. Ellis has been assigned to the office of the District Engineer, Corps of Engineers, Washington, D. C., as executive officer taking the place of **Lt. Col. Harry R. Davis** who takes over as Operations Officer. Major Ellis holds a Master of Science in civil engineering degree from Massachusetts Institute of Technology. During the war he served in the Pacific with the 47th Engineer General Service Regiment and later commanded an amphibious training center in Hawaii. Since 1947 he has been on duty in Providence, R. I.

Llewellyn G. Leavitt has been appointed assistant area engineer and chief of construction for the Oahe, S. D. area, Corps of Engineers.

Harvey H. Turner, Jr., has resigned as Columbus, Ohio, traffic engineer to become engineer in charge of the traffic and transportation section of the Regional Planning Commission there.

Fred W. Fisch of Schenectady has been appointed deputy superintendent in the New York State Department of Public Works. He will succeed **Frank L. Brown**, Fort Edward, who has resigned. Mr. Fisch, who has been with the department since 1946, is director of its Highway Planning Bureau. He is a graduate of Union College. Mr. Brown will open a consulting engineer's office in New York.

IN CONTINUOUS OPERATION SINCE 1913 WITH ONLY ONE OVERHAUL!



FRED C. HAGEN
Commissioner

H. H. BEHLMER, Engineer and Assistant Superintendent

City of Fargo
WATER WORKS DEPARTMENT
ORA C. AYLIFFE, Supt.
FARGO, N. DAK.

September 14, 1949

Simplex Valve & Meter Company
68th & Upland Streets
Philadelphia 42, Pennsylvania

Attention: Mr. E. A. McQuade

Gentlemen:

Our oldest Simplex Venturi Meter Serial No. 18-08-256-OD, as near as we can learn, was installed in the pumping plant here at Fargo, North Dakota, in 1913 to measure the flow of water going out to the city. This meter is still in continuous service having been overhauled in about 1929. It still has the original clock drive mechanism which came with it.

We have three other Simplex Meters in use. Serial No. 16-86-916-OK was installed in 1929; Serial No. 16-178-2213-OK was installed in 1938. The clock mechanism in these meters has been changed to electric clocks except the oldest one for which a new clock has been ordered.

All of these meters are in continuous operation and require almost no attention whatever except to check accuracy and make slight adjustments once in two years. This work can be done by our own men.

We certainly feel that our past experience with Simplex Meters qualifies us to recommend them to anybody, anwhere.

Very truly yours,

CITY OF FARGO WATER DEPARTMENT
H. H. Behlmer
H. H. Behlmer,
Asst. Supt. Water Department

IT'S SIMPLEX
IT'S ACCURATE

When you purchase Simplex equipment, of whatever type, you will find the same features of ruggedness, long life, low maintenance cost, and accuracy as did the user of the meters at Fargo, North Dakota.

For full information, write to Simplex Valve & Meter Company, Dept. 8, 6751 Upland Street, Philadelphia 42, Pa.

SIMPLEX
VALVE AND METER COMPANY

AIR MOVED anywhere men are at work!

EVER try putting air to work on a job that's hard, where there's heat or dust or harmful gases?

When men work underground, in close confines, or where there are fumes from welding, painting, or dust from chipping plaster, handling cement or similar unpleasant jobs, you get penalized on production from too many "times out".

Why not move in one of the air movers that ventilate, clear the air. Herman Nelson has a variety of Portable Ventilators to solve bad air problems.

You get more production, fewer complaints from workmen on the job. The work is done better—you benefit from savings.

Send for our latest bulletins on Portable Ventilating Products. Free upon request. Write to Dept. EN 1.

AAF herman nelson

HERMAN NELSON DIVISION

AMERICAN AIR FILTER CO. INC.

MOLINE, ILLINOIS

EDUCATION and RESEARCH

SAFETY EQUIPMENT LABORATORY—This, the world's largest research laboratory devoted to the development of safety equipment for all industries, was dedicated recently in Pittsburgh, Pa., by the Mine Safety Appliance Co. The building is a memorial to John T. Ryan, pioneer in industrial and mine safety. Safety equipment and instruments for use in anti air pollution and to combat the dangers from the use of atomic energy are among the projects planned in the laboratory. In the 4-story building are high altitude chambers; dust, fume and gas chambers; a wind tunnel, and an electric microscope that permits study of dusts and other substances at a magnification up to 100,000 times. Director of the company's research and development is William P. Yant.

Cost of Marketing Building Materials

The costs of marketing building materials will be studied by the University of Pennsylvania under a research contract with the Housing and Home Finance Agency.

The contract is part of the comprehensive research being conducted by HHFA through its Division of Housing Research in the endeavor to reduce costs of housing.

The study will be carried out in the Philadelphia metropolitan area and in one or more other cities. Richard U. Ratcliff, director of housing research, said. Cooperation of builders, dealers, and manufacturers will be sought by the university. Statistical and other information on prices, margins, and dealers' expenses will be collected and analyzed.

The objectives of this research are to determine for each of the important building materials the relation which, under various circumstances, the costs of marketing bear to the cost of the delivered building materials, and the relation which the costs of marketing of the materials in a house bear to the total construction cost.

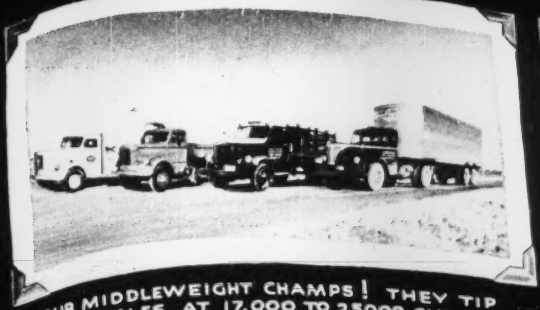
The study will also endeavor to explain the elements which compose the costs of marketing specific materials, the functions and services performed, and their adequacy and effectiveness. The influence and effect on marketing costs of government policies and practices, and of the policies and practices of builders and manufacturers will also be studied.

Engineers Loan Fund to get $100,000 bequest

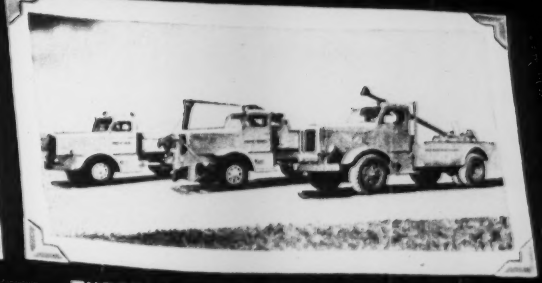
The Engineers Loan Fund of the University of Texas, Austin, will receive a bequest of about $100,000 from the estate of Louis C. Wagner, a civil engineer of Houston, who died April 19. The fund received a charter in 1951 from the state as a corporation having no capital stock. The fund was chartered to solicit and receive donations and make loans of money at low interest rates to students of the engineering college of Texas University.

This fund has helped more than 800 student engineers to finish their education. Now the Houston Bank and Trust Co., the executor of Mr. Wagner's estate, has been directed by his will to give 70 percent of his $150,000 estate to the loan fund. This will make possible additional financial help to many deserving student engineers.

Mr. Wagner received a civil engineering degree from the University of Texas in 1908.



OUR MIDDLEWEIGHT CHAMPS! THEY TIP THE SCALES AT 17,000 TO 25,000 GVW... MODELS HR--HC--HA--HRC



THESE MEDIUM-HEAVIES WIN BLUE RIBBONS IN THE 28,000 TO 34,000 GVW CLASS. MODELS YU--ZU--SU

OUR BIGGEST 4X4 BRUTES WEIGH IN AT 40,000 TO 44,000 GVW MODELS M-7 AND M-10

INTRODUCING THE LD! OUR POPULAR NEW OFFSPRING--THE ONLY *TRUE* LIGHT-DUTY 4X4! A 14,500 GVW WONDER BOY

BIG 6X6 BRUISERS! 30,000 TO 60,000 GVW MODELS M 6X6--H 6X6--MU 6X6

Meet the whole family!

This line-up in our album covers the big FWD family of *basic* models. You should see the *other* pages . . . picture-after-picture of both highly specialized and conventional applications . . . plus photo-proof of economy, safety and spectacular performance . . . both on and off the highway. Put the *extra-traction* and *proper weight distribution* of this family of bread-winners to work for you, too! See your FWD distributor or write FWD.

THE FOUR-WHEEL-DRIVE AUTO CO. • Clintonville, Wisconsin

Canadian Factory: Kitchener, Ont.

World-Wide Sales and Service

FWD

America's Foremost Heavy-Duty Truck

write for your copy

of Hendrick Mitco Products Catalogue

Tells how Hendrick Mitco is made from steel bars, forced into integral panels under hundreds of tons of hydraulic pressure . . . shows their advantages for open steel flooring, and for stairways, ladders and fire escapes . . . explains their use, with fill of concrete, cement, asphalt or composition, as Armorgrids for floors, platforms, ramps and driveways that have to withstand heavy traffic.

SEE OUR CATALOG IN SWEET'S

HENDRICK

Manufacturing Company

Perforated Metals
Perforated Metal Screens
Architectural Grilles
Mitco Open Steel Flooring,
"Shur-Site" Treads and
Armorgrids

45 DUNDAFF STREET, CARBONDALE, PENNA.

Sales Offices In Principal Cities

To increase the headwater at hydro plant, a Sauerman Slackline Cableway removes 80,000 cu. yd. of boulders and mud from 1,500-ft. section of spillway, piling spoil along bank.

SLASH DIRT HANDLING COSTS with SAUERMAN CABLEWAYS

Send for booklet showing how leading contractors reduce their costs with Sauerman machines.

Whatever your problem of material handling, your first consideration is to keep the cost low and use as little labor as possible. When you have a contract that requires digging deep and moving material a distance of several hundred feet or more to an elevated delivery point, there is no machine equal to a Sauerman Slackline Cableway. It digs, hauls, conveys and lifts in a continuous cycle with one operator. There is a size and type of Sauerman Machine to meet your specific requirement. Low initial cost—small power consumption—inexpensive maintenance.

SAUERMAN BROS., Inc.

532 SO. CLINTON ST. CHICAGO, ILLINOIS

OBITUARY

Frank E. Johnston, 58, civil engineer with the Corps of Engineers at Fort Norfolk, died July 8 while en route to Norfolk from Baltimore.

Roy Oliver Papenthien, 58, civil engineer and architect associated with Gates, Moe, Weiss and Papenthien, consulting engineers of Milwaukee, died July 9. He was a graduate of the University of Minnesota.

R. C. Fletcher, 98, former provincial bridge superintendent, Province of New Brunswick, died at Fredericton, N. B., July 6.

Joseph Soucisse, 54, died July 9. For the past 30 years he had been building contractor at Verdun, Que.

Josiah Chester Witherell, 45, survey engineer for the California division of water resources, died recently at Velma Lake in Desolation Valley, El Dorado County, Cal.

Walter H. Clark, 69, a retired building contractor, died at Brentwood, N. H., on July 13.

Anthony Locke, 64, died recently in Vero Beach, Fla. For many years he had been prominent in the building industry in Indiana.

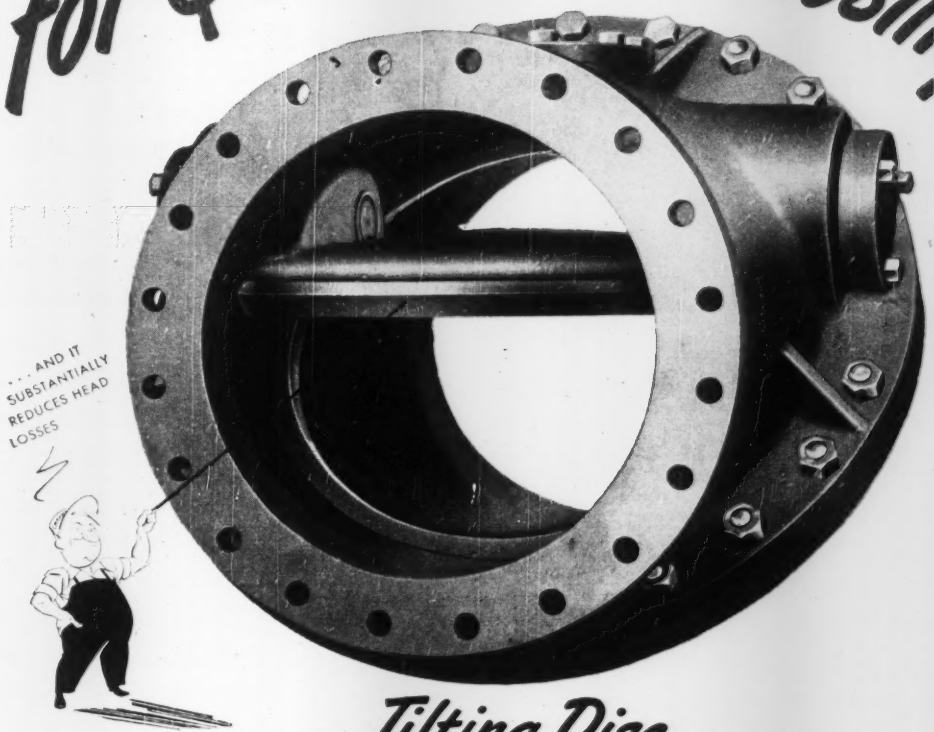
James P. Morrissey, 86, former city engineer of Dunkirk, N. Y., and one-time engineer of Fredonia and Chautauqua County, N. Y., died July 15 after a long illness.

Ralph E. Spaulding, long prominent in Jacksonville engineering circles, died recently in Los Angeles, Cal. He had been active in the Jacksonville Chamber of Commerce and a member of the Jacksonville Kiwanis Club. He was a member of the ASCE.

Frederick V. Ferber Jr., 39, son of state purchasing director Ferber and head of the Ferber Co., engineers and builders of Hackensack, died July 18 at his home in Englewood, N. J.

R. C. Fletcher, 98, died July 4 at Fredericton, N. B. In 1944 he retired as provincial bridge superintendent of the New Brunswick public works department after serving 50 years in that position. He was the oldest holder of an engineering position in Canada at the time of his retirement. He had been active and healthy until about 6 months ago, and was ill only 5 days just prior to his death.

For Quick, Quiet Closing...

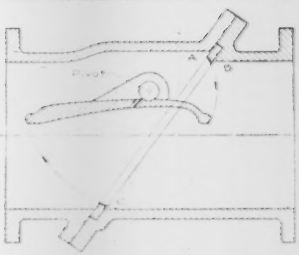


USE CHAPMAN *Tilting Disc* CHECK VALVES

You get truly cushioned closing with these tilting-disc check valves. There's no slamming. Instead, the disc rides smoothly on the flow, opens easily, closes quickly and quietly. Because of this effortless action, power costs are lower (when used on pump discharge lines) . . . maintenance costs are lower . . . operating expenses are saved in a dozen ways.

Available in either iron or steel. Write for bulletin with complete information.

The Chapman Valve Mfg. Co.
INDIAN ORCHARD, MASS.



Cross-section of the Chapman Tilting Disc Check Valve illustrating the way that the balanced disc is supported on the pivot, with arrows showing the travel of the disc. A feature of the design is that the disc seat lifts away from the body seat when opening, and drops into contact when closing, with no sliding or wearing of the seats.

Getting the MOST from your DRILLING ?

ROCKMASTER blasting pays you MORE PROFITS PER DRILL HOLE!

The ROCKMASTER blasting system changes a lot of thinking about drilling blast-holes, because it enables the explosives in each hole to do more work! Many blasters today are saving from 20% to 40% of their former drilling costs—and saving important money on dynamite, too—since putting the ROCKMASTER system into effect in their quarries, mines or construction operations.

The ROCKMASTER system is based on split-second time intervals between blast holes, the timing being controlled within the electric detonators. You have a choice of 16 time intervals, which we help you select to fit your requirements. Explosives are chosen and loaded to fit the ROCKMASTER plan. The result: Explosives gases work behind the burden longer, stepping up blasting efficiency and accomplishing far superior breakage, combined with almost unbelievable control of throw.

In terms of drilling, this usually means that drill holes can be spaced farther apart. Or, it might mean you can use less dynamite with your regular spacing. Drilling for secondary blasting is usually cut way down, frequently eliminated altogether.

Write for booklet showing typical ROCKMASTER loading patterns for various types of blasting work. Or, better yet, call in the Atlas representative and let him tell you frankly what ROCKMASTER blasting can do for you.

ROCKMASTER TIMINGS

Rockmaster No.	Avg. Time of Each Delay from Zero (milli-seconds)
0 (zero)	0 (inst.)
1	8
2	25
3	50
4	75
5	100
6	125
7	150
8	175
9	200
10	250
11	300
12	350
13	400
14	450
15	500
16	550

ROCKMASTER Reg. U. S. Pat. Off.

ATLAS EXPLOSIVES

"Everything for Blasting"

CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington, Del. • *Offices in principal cities* • *Cable Address—Atpowco*

ELECTIONS AND ACTIVITIES

Six officers were installed recently by the Topeka Society of Professional Engineers. The new officers are: A. J. Mowry, president; G. O. Paden, vice president; E. E. McCracken, secretary; Carl Gray, assistant secretary; Walter Thomas, treasurer; and Frank Willey, member at large.

Paul J. Mahoney, Pottawattamie county engineer at Council Bluffs, has been reelected president of the County Engineers association at the organization's convention held recently in Des Moines.

At the same convention, Wilson H. Handley, of New Providence, was elected president of the Board of Supervisors.

CALENDAR

Photogrammetry Seminar University of Denver, Denver, Colo., Aug. 7-11.

Maine Water Utilities Association, summer meeting, Mt. Desert Island, Me., Aug. 9.

ASCE, North Carolina section, joint meeting with N. C. Society of Engineers, Wrightsville Beach, N. C., Aug. 18-19.

Pennsylvania Water Works Operators' Association, annual conference, Nittany Lion Inn, State College, Pa., Aug. 21-22.

Pennsylvania Sewage & Industrial Wastes Association, Nittany Lion Inn, State College, Pa., Aug. 23-24.

N. Y. section AWWA, fall meeting, Saranac Inn, Upper Saranac Lake, N. Y., Sept. 7-8.

South Dakota Reclamation Association, convention, Pickstown, Sept. 10-11.

Canadian Institute on Sewage and Sanitation, annual convention, Ingwin Inn, Ontario, Sept. 11-13.

W. Va. section AWWA, annual meeting, Prichard Hotel, Huntington, W. Va., Sept. 13-14.

American Railway Bridge and Building Association, annual meeting, Hotel Stevens, Chicago, Ill., Sept. 18-20.

New England Water Works Association, Poland Springs, Me., Sept. 18-21.

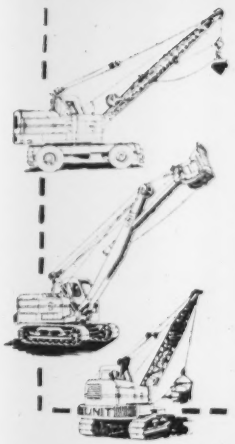
Institute of Traffic Engineers, annual meeting, Commodore Hotel, N. Y. City, Sept. 24-27.

American Institute of Park Executives annual convention, Baker Hotel, Dallas, Tex., Sept. 25-28.

Pennsylvania Water Works Association, Claridge Hotel, Atlantic City, N. J., Sept. 28-29.

Rocky Mountain Sewage Works Association, La Fonda Hotel, Santa Fe, N. M., Sept. 27-29.

South Dakota State Association of County Commissioners, Auditors, Highway Superintendents and State Highway Officials, annual convention, Cleghorn Hotel in Sioux Falls, Sept. 28-29.



Everywhere . . . on all types of jobs . . . you see UNITS operating at peak efficiency. They LIFT . . . LOAD . . . HAUL . . . DIG . . . with speed and precision, and with power to spare.

UNITS are chosen for the tough jobs because they are carefully engineered and ruggedly constructed, backed by a quarter century of experience building shovels and cranes exclusively. The new FULL VISION CAB provides maximum visibility. Operator sees in all directions. Promotes safety.

UNITS are available in ½ and ¾ yard excavators and cranes up to 15 tons capacity. Crawler or mobile type...Fully convertible to ALL attachments . . . Diesel or gas engine. Write for literature.

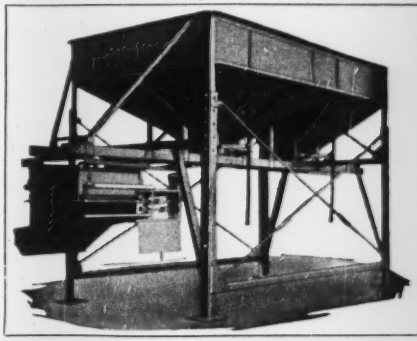
UNIT CRANE & SHOVEL CORP.
6315 W. Burnham St. • Milwaukee 14, Wis., U.S.A.

LET US TELL YOU THE REASONS WHY

UNIT

SHOVELS • DRAGLINES • CLAMSHELLS
CRANES • TRENCHOES • MAGNETS

A 5695-1-50 C



Winslow BINANBATCH
—Reduces Your Job Cost
Use with a
10S-11S-14S-16S Mixer

Complete with scale for two or three aggregates.
With two or three overhead storage bins.
For use on culvert bridge curbing foundation jobs.
Wherever above size mixers are in operation.
Prompt Delivery — Write or Wire

Mfrd by
WINSLOW SCALE CO.
TERRE HAUTE, IND.
Distributors Located throughout U. S.

dewater the Complete way

When the going gets wet—call on "Complete"! We have the proven equipment, the successful experience and the cooperative personnel to keep you on firm ground. Remember this — only "Complete's" patented fluted wellpoint provides Complete assurance of constantly dry ground at all times.

Write today for "Complete" catalog Dept. ER

COMPLETE MACHINERY & EQUIPMENT COMPANY, INC.
36-40 11th STREET
LONG ISLAND CITY, N. Y.
Branch Warehouse
3rd AVE. & ADAMS ST.
GARY, INDIANA

COMPLETE WELLPOINT SYSTEMS
FOR SALE OR RENT

GROUTER AND PEA SHOOTER COMBINED IN 1 UNIT!

MAYO

FREE Bulletin Describes Money-Saving Combination

Mayo Pneumatic Grouter lowers equipment costs because it's readily converted into pea shooter . . . does "double duty." Places low pressure grout in tunnels, mines, railroad subgrades, sunken pavements . . . injects chemical emulsions for soil stabilization.

MAYO
TUNNEL & MINE EQUIPMENT
Robert S. Mayo
Civil Engineer
LANCASTER, PA.

UNIT PRICES BID BY CONTRACTORS

Radial gates, valves for Enders Dam, Nebr.

The low of five bids for installing radial gates and hollow-jet valves, concrete and earthwork for completing Enders Dam was $138,033, received June 20 by the Bureau of Reclamation. It was 18% below the next to low and 36% below the high bid, but 36% above the engineer's estimate.

Enders Dam is part of the Missouri River Basin Project, Frenchman-Cambridge Division. It is on Frenchman Creek, 24 miles south of the town of Enders and the C. B. & Q. railroad. The work includes erecting four and completing and erecting two 50x30-ft radial gates; installing electrical and mechanical control apparatus, electrical transformer and distribution system; placing concrete plug in outlet works trashrack structure; installing two 60" hollow-jet valves and a portion of the ice-prevention air system distribution piping; miscellaneous concrete work and repairs.

The contractor must complete the job in 150 days or forfeit $60 for each day of delay. All work requiring the interruption or control of the upstream flow of water cannot be started until October 1.

The government furnishes the electrical equipment, radial gates and hoists, hollow-jet valves, joint-filler, paint, lubricants, parts for gate-hanger assembly, anchor bars and bolts, and reinforcement bars for concrete in gate counterweights. Wages prevailing are: unskilled laborers, $1.00 per hour; carpenters and electricians, $1.75; structural ironworkers, $1.85; painters, $1.50; power-equipment operators, $1.35-$2.00; stone masons, $2.40.

Bidders included:

1 Claussen Olson-Benner, Inc., Holdrege, Nebr. (Contract)	$138,032.75
2 Foster-Smetana Co., Omaha	168,933.50
3 Stebbins Frost Constr. Co., Tulsa, Okla.	217,276.35
Engineer's estimate	191,211.90

Items	Quantity	Unit prices 1C	2
Protect works, unwatr, care of riv	ls	$2,500	$6,000
Uncompact till, pl	cy	13,500	.60	1.00
Concrete:				
Clos plug, outlet works	cy	45	80.00	55.00
Spillway gate counterweights	cy	179	55.00	75.00
Blockouts	cy	30	100.00	225.00
Misc	cy	25	100.00	225.00
Repairs	ls	.....	4,000	4,500
Joint filler, plac	sf	130	1.00	1.00
Reinf. bars:				
Rad gate cntrwgt, pl	lb	7,940	.10	.10
Clos plug, outlet works, f & p	lb	3,000	.20	.25
Cmt, f & handl	bbl	325	6.00	8.00
Hdlw jet vlvs, ins	lb	30,000	.05	.10
Complete high pres gate riv-in outlet wks	lb	76	10.00	7.00
Radial gates, inst	lb	975,650	.075	.09
Sandbl & paint:				
Gate No. 1	ls	.....	5,000	2,000
Gate No. 6	ls	.....	5,000	3,000
Track rails, inst	lb	50	10.00	7.00
Ice prev air sys, ins	lb	365	1.00	2.00
Fan & louver in battery house, ins	lb	24	$10.00	$6.00
Elec mtl conduits, ins	lf	550	2.50	3.00
Elec conductors, ins	lb	1,300	1.50	2.00
Elec apparatus, ins	lb	3,500	1.00	.50
Stor battery, ins	ls	.....	2,500	500.00
Remov exist prot earth blanket from spillway	cy	2,000	1.00	1.00

Roofed Reservoir Lewiston Orchards, Idaho

The Clearwater Reservoir, part of the Lewiston Orchards Project, Idaho, brought in a low bid of $63,705.90, $20,000 lower than the engineer's estimate. Five contractors submitted bids June 6 to the Bureau of Reclamation.

The reservoir will be reinforced-concrete enclosed, 140 feet, 10 inches square with a capacity of 1,500,000 gallons. Water will be delivered through a 14-inch diameter asbestos-cement pipe influent line which will connect with the existing water pipeline 350 feet northeast of the filter house. The job site is about 6½ miles southeast of the city of Lewiston.

Besides the reservoir itself, the work includes electrical installations, piping from the end of the asbestos-cement influent pipeline to the transition block, drainage and overflow pipelines for the reservoir with connections to the 18-inch concrete pipe waste line, valve boxes and concrete transition blocks, gravel surfacing around the reservoir and driveway.

Work must begin within 30 days after proceed notice and be completed in 120 days. The government will supply all reinforcement bars for concrete, rubber water stops, asbestos-cement pipe, fittings and adapters.

Wages to be paid are: unskilled laborers, $1.55 an hour; concrete laborers, $1.70; pipe layers, $1.80; electricians, $2.33; cement finishers, $2.35; power-equipment operators, $1.75-2.35; steam fitters, $2.50.

Bidders included:

1 Heidy Construction Co., Boise, Idaho (Contract)	$63,708.90
2 John King & Co., Yakima, Wash.	72,030.75
3 C. B. Lauch Constr. Co., Boise	108,355.30
Engineer's estimate	83,748.00

Items	Quantity	Unit prices 1C	2
Excavation	cy	11,000	$2.50	$0.16
Overhaul	cy	500	.05	.10
Const embankm	cy	890	.30	.10
Backfill	cy	1,645	.30	.20
Compact backfill	cy	755	1.00	2.00
Scrnd gray rd, f & p	cy	100	2.00	3.00
Sand & gray drns, f & constr:				
With 4" dr tile	lf	347	2.20	1.25
Without dr tile	lf	1,215	2.00	.60
6" scw. pipe, cmt joints, f & lay	lf	56	1.00	1.50
Concr in struct	cy	235	20.00	44.50
Cmt, f & handle	bbl	1,254	5.00	5.50
Reinf bars, pl	lb	100,000	.04	.065
M'tl pipe, bits, vlvs, furn & inst	ls	.....	1,200	11,000
Misc metalwork	ls	.....	1,000	750.00
Asbestos-cmt pipe, lay:				
14" diam	lf	40	1.00	1.75
18" diam	lf	35	1.00	1.20
Elec sys for intercom circuits, bet filt house & reserv, f & inst	ls	.....	600.00	400.00

LINK-BELT SPEEDER

LINK-BELT SPEEDER CORPORATION, CEDAR RAPIDS, IOWA

"Builders of the Most Complete Line of SHOVELS-CRANES-DRAGLINES"

REPORT

Dear Boss:

Shovel Operators are pretty keen gentlemen. I asked several about their new Link-Belt Speeder LS-51's and I present herewith their answers to my questions:

Q. *How does the new LS-51 steer?*
A. There's no pulling or hauling . . . Just flip a six-inch lever, and Brother—you're cutting this machine right in place. You lose no time moving into cut.

Q. *Where is your dipper trip rope?*
A. There is none. I never move my hand from the hoist lever . . . Just push the lever to one side and the dipper opens like magic.

Q. *Do you adjust the clutches often?*
A. I don't know what that means on this machine. Once the clutches are set they run for months without touching them.

Q. *Is the LS-51 a hard machine to maintain?*
A. This is a perfect machine to maintain . . . Everything that needs care is accessible and within easy reach.

Q. *Is the LS-51 an easy machine to keep clean?*
A. It's the cleanest machine I ever operated . . . Nothing is covered with grease, because the grease is in the roller bearings where it does its job—not on the deck for me to mop up.

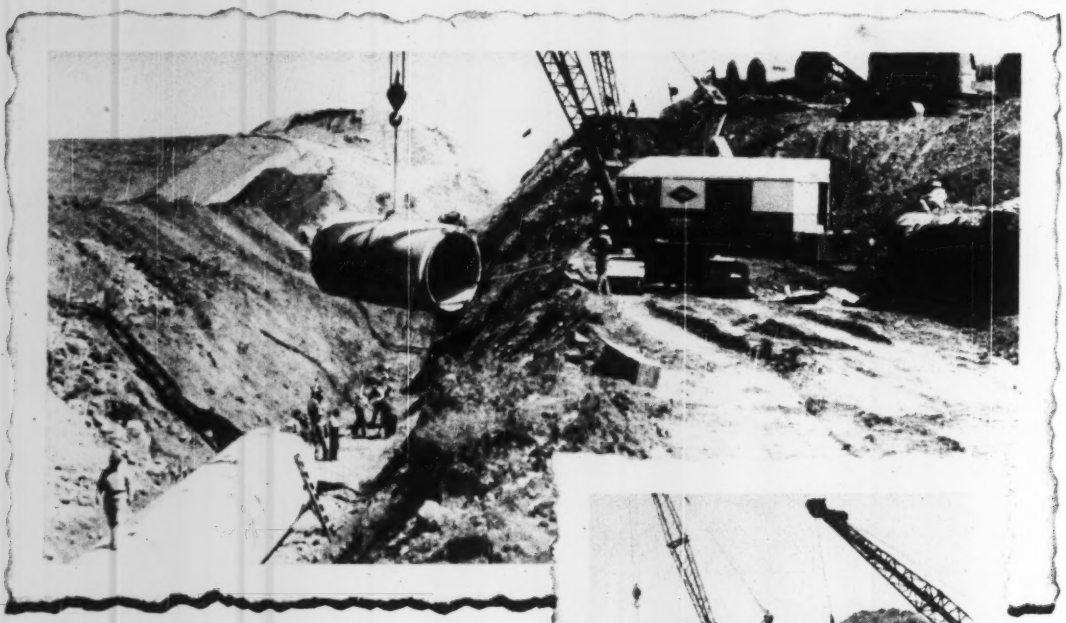
Q. *Is the machine always this quiet?*
A. There are no noisy gears on this rig, and there are no clutch squeals . . . All I hear is the engine opening up when I feed the dipper into the bank . . . All the power I have at my finger tips is on the dipper teeth, where it belongs.

"There, Boss, are reasons why operators rave about our new LS-51. And those are a few of the reasons why I find LS-51's setting production records across the country."

This LS-51 digs faster, swings faster, dumps faster, and gives greater production capacity at the stock piles of the Milton Grove Sand Co., Inc., of Mt. Joy, Pa. This firm also owns a Link-Belt Speeder K-360, of 1½ yds. capacity.

Yes Sir, THE LS-51 HAS SPEED-o-MATIC CONTROLS

The LS-51 is the first ½ yard shovel-crane with hydraulic controls . . . Oil under pressure does all the work . . . Speed-o-Matic hydraulic control gives the operator instantaneous control for perfect "feel of the load" . . . Less fatigue . . . And up to 25% more production.



New 200 mgd. Water Line in Denver Uses 10 Miles of *CONCRETE PIPE*

DENVER'S new water line, "Conduit No. 20," extending from its filter plant at Kassler to the city's reservoir at Marston Lake, is supplying the city with 200 mgd. This giant water line consists of 25,252 ft. of 90-in. concrete pipe in 16-ft. sections with 8-in. walls. Each section weighs about 21 tons.

Conduit No. 20, a $3\frac{3}{4}$ million dollar project, replaces old wood stave lines laid many years ago over a more indirect route.

This giant new water line is the latest in a series of water line installations in the Denver area. During 1948 and 1949 earlier installations in this project used 30,003 ft. of concrete water pipe in sizes ranging from 24-in. to 42-in.

Denver's extensive use of concrete pipe is typical of the preference for concrete pipe water lines throughout the nation. That's because concrete pipe has the strength to resist severe impact and to sustain heavy overburdens, because it has the durability to render ***low-annual-cost*** service. Concrete pipe, moreover, has no tuberculation to impair its hydraulic efficiency. Its dense structure and joints, which can be made watertight, prevent leakage and infiltration.

Taste, odor and dirty water difficulties are minimized in concrete pipe water lines. That's because concrete pipe meets every operating requirement and in addition provides ***low-annual-cost*** service that pleases engineers and taxpayers alike.

•

Photos show two construction views of Denver's Conduit No. 20. Pipe made by Lock Joint Pipe Company, prime contractor. Laying operation by Gordon-Bressi-Bevanda.

PORTLAND CEMENT ASSOCIATION

33 WEST GRAND AVENUE, CHICAGO 10, ILLINOIS

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

O., Bowling Green—B.A. About 8/15—City, water mains, Finkbeiner, Pettis & Strout, 518 Jefferson St., Toledo, engrs. CD 4/4/48.

O., Celina—B.A. 8/23—City, water treatment and softening plant, incl. treatment plant, chemical and filter bldg., and settling basins and water reservoir, incidental water mains. Approx. $400,000. Plans deposit $25. Finkbeiner, Pettis & Strout, 518 Jefferson St., Toledo, engrs.

Puerto Rico—B.A. 8/22—Puerto Rico Aqueduct & Sewer Auth., P.O. Box 2832, San Juan, Zone 12, Sect. 1 of Rio Grande de Loiza Development, incl. furnishing, testing, del. F.A.S. Port of Embarkation and guaranteeing 4 synchronous motor driven centrifugal pump units, two 7 cu.ft./s. capacity at 160 ft. total head and two 10,500 g.p.m. capacity at 170 ft. total head, providing services of a competent engr. or supt. for such periods as are ordered by the Authority to assist in erecting, testing the equip. Plans deposit $10. Buck, Seifert & Jost, 112 E. 19 St., New York 3, N. Y., consult. engrs. CD 1/5/47.

Tex., Dallas—Bids Asked—Wiley Roberts & Sons, 1922 W. Jefferson St., water lines in 31 acre tract, N.W. Oak Cliff, $35,000.

CONTRACTS AWARDED

† Calif., El Toro—U. S. Navy, San Diego, 36 in. water supply line to El Toro Marine Corps. Station, to Alex. Robertson Co., 14433 S. Paramount Blvd., Paramount, $459,630.

SEWERS, WASTE DISPOSAL

BIDS ASKED

Wis., Hayward—B.A. 8/4—City, J. J. Becker, clk., sewage treatment plant, $75,000. Plans deposit $15. Hettrick & Eschweiler, 521 Sexton Bldg., Minneapolis, Minn., engrs. Extended date, CD 6/22.

Calif., Stockton—B.A. 8/14—City, City Hall, storm water sewers in portions of Stockton Acres. Approx. $50,000. Plans deposit $15. H. M. Dunlap, City Hall, city engr.

CONTRACTS AWARDED

Md., Hyattsville—Washington Suburban Sanitary Comm., nomination of, 6,200 ft. 36 in. RCCPA sewers; 7,410 ft. 36 in. cylinder reinforced concrete pressure sewers along Potomac River from Brookmont to Cabin John Branch, Contr. 274-S, to Intercounty Constr. Corp., 4720 Baltimore ave., $509,625. Bids 6/28, awarded 7/21, CD 7/11.

Miss., Meridian—City, R. S. Tew, clk. and treas., Meridian, 33,735 lin. ft. 6- to 36-in. storm and sanitary sewers, 125 manholes, 107 inlets, to Pylant Bros. Constr. Co., Box 2027, $129,123. Bids 7/12, CD 6/20.

Tex., Houston—Meadowcreek Addn., E/o Galveston Rd., sanitary sewers and storm sewers. Purchase and hire. $145,000. CD 7/10.

Tex., Mesquite—W. P. Luke & Assoc., Magnolia Bldg., Dallas, sewage disposal plant and lines and storm sewers, near here. Owner builds. $100,000. CD 7/14.

Tex., San Antonio—E. J. Burke & Sons, Inc., 4220 S. Lazarono St., sanitary sewers. Owners build. $55,000. CD 7/5.

Tex., South Houston—Howard L. Thom & Jack Parry, 3100 Old Spanish Trail, sanitary sewers. Owner builds. Approx. $50,000.

Tex., Waco—City, sanitary sewer lines. Owner builds, $125,000. H. Borsers, Waco, city engr. CD 7/17/49.

BRIDGES

BIDS ASKED

Wis., Wauwatosa—B.A. 8/7—City, 187 ft. long 22 ft. roadway and one 43 ft. long with 22 ft. roadway bridge over Menomonee River. $100,000. H. B. Willschutt, city engr. CD 4/13/44.

CONTRACTS AWARDED

California—State Div. Hys., Sacramento, July 19, superstructure for bridge and embankments across American River near Rivas, about 2 mi. northeast of Sacramento, Sacramento County, Ford & Bishop, Box 812, Sacramento, $608,569. CD 6/8.

Florida—State Rd. Dept., Lang Field, St. Petersburg, July 5, Structure A, twenty-eight 36 ft. concrete deck girder spans on concrete pile bents; one electrically operated bascule span approx. 0.4 mi. south of Maximo Point; Structure B, forty 36 ft. concrete deck girder spans on concrete pile bents; one 82 ft. steel I-beam span on concrete pile bents, approx. 2.99 mi. south of Maximo Point, Rd. 55, south of Maximo Point, State Proj. Job No. 1517, 777 Pinellas Co., from Hendry Corp., Rattlesnake, $838,940. CD 6/22.

CONTRACTS AWARDED

New Jersey—New Jersey Turnpike Auth., 65 Prospect St., Trenton, Contr. 32, constr. substructures 4 bridges etc. between relocated Bayway and Elizabeth Interchange, Union Co., to Napp-Greco Co., 241 Riverside Ave., Newark, $772,863. Bids 7/14, awarded 7/21. CD 7/14, under LB.

▲ New Jersey—New Jersey Turnpike Auth., War Memorial Bldg., Trenton, Contr. 41, 4 steel concrete structures grading, railroad track work, etc. between Allentown and Raritan River, Mercer and Middlesex Counties to Construction Service Co., Lincoln Blvd., Bound Brook, $1,080,913. Bids 7/12, awarded 7/21. CD 7/14, under LB.

▲ New Jersey—New Jersey Turnpike Auth., War Memorial Bldg., Trenton, Contr. 38, 18 bridge structures, reconstr. and paving approach roads and grading, drainage on interchange areas, Woodbridge Twp., Carteret and Linden, Middlesex and Union Counties, to Bruno & Bruno, Airport Rd. & Station, Bldg., Phila., Pa., $4,648,393. Bids 7/14, awarded 7/21. CD 7/18, under LB.

New Jersey—New Jersey Turnpike Auth., War Memorial Bldg., Trenton, Contr. 39, constr. substructures for Trumbull St. viaduct and Hunting Ave. bridge, Union Co., to Koppers Co. Inc., Metal Products Div., Garrett Bldg., Baltimore, Md., $517,453. Bids 7/13, awarded 7/21. CD 7/17.

STREETS AND ROADS

BIDS ASKED

Miss., Morton—B.A. 8/8—City, c/o town clk., paving certain streets. Plans deposit $20. Mallett & Assoc., 41612 E. Amite St., Jackson, engrs. CD 6/14.

O., Columbus—B.A. 8/8—City, resurf. approx. 1.5 mi. portland cement concrete pavement on Gay and Oak Sts. Robt. F. Werner, city engr. CD 10/30/46.

Calif., Los Angeles—B.A. 8/15—Bd. Supervs., Los Angeles Co., 501 Hall of Records, improv. Racine Ave., Paramount, C.I. 1713, $89,625. C. E. Arnold, co. engr. CD 9/16/49.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $20,000; other public works $50,000; industrial buildings $63,000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects. Invited except where award is not made to the low bidder. In this case a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $2,000,000 or over.
B.A. Bids Asked
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

Tex., Dallas—Bids Asked—Wiley Roberts & Sons, 1922 W. Jefferson St., pavement street paving, 32 acre tract, N. W. Oak Cliff, $65,000.

Pennsylvania—State Hy. and Bridge Auth., 506 N. Office Bldg., Harrisburg, sixty 21 ft. divided highway consisting of 8 in. conc. pavement 24 ft. wide on each side of concrete divider area 4 ft. wide incl. 5 reinforced conc. structures, grading and drainage, construction of ramps consisting of 8 in. conc. pavement of various widths incl. one plate girder bridge and the relocation of a parallel road incl. reinforced conc. structure all within an overall length of 9.891 mi., Total length of project 6.480 mi. L. R. 7601, sec. 1A1, T. R. 22 and 30, from point southeast of the Carnegie Boro, Scott Twp. line to a point northeast of the Scott Twp.-Greentree Boro line, a section of Penn-Lincoln Parkway west, Allegheny Co. from County Constr. Co., Carnegie, $1,472,634. CD 6/29.

Pennsylvania—State Hy. Dept., 506 N. Office Bldg., Harrisburg, July 21, construct 8 in. conc. pavement 24 ft. 36 ft., and variable in width, widen of existing pavement with plain c. conc. base six ft., 18 ft. 22 ft. and variable in width, bit. surf. of existing pavement and new base 24 ft., 36 ft. 40 ft. and variable in width, bit. surf. of existing pavement 24 ft. wide, 18.782 ft. L. R. 147 (6), T. R. 100, from a point at the intersection of L. R. 147 and 142 northwesterly, Chester Co., from S. R. Jones & Sons Co., Box No. 6, Downingtown, $719,180. Bids 6/1. Surf. existing pavement variable in width 33 to 52 ft., 8.834 ft. L. R. 154 (11), T. R. U. S. 22, Northampton Co. from G. B. Cramer Constr. Co. Inc., P. O. Box 274, Lebanon, $166,067. CD 7/5.

CONTRACTS AWARDED

▲ New York—Bureau Contracts & Accounts, Albany, constr. elevated sect. Major Deegan Expressway, 0.3 mi. extend. from point near Bronx Terminal Market northward across New York Central R. R. tracks to approaches to Macombs Dam Bridge, incl. steel viaduct structure, 155 ft. span plate girder bridge, paving twin 45 ft. concrete roadways and necessary demolition and re-drainage, lighting, public facilities, Bronx Co., St. John's Drake & Piper, Inc., 86 Trinity Pl., New York, $4,987,464. Est. $5,214,000. Bids 6/20, CD 6/26, under LB.

New York—Bureau Contracts & Accounts, Albany, reconstruct 1 mi. Court St. between Griswold St. and State Hospital Entrance, Broome Co., to Santo Constr. Co., Inc., 60 Exchange St., Binghamton, $569,820. Bids 6/1, CD 6/15, under LB.

EARTHWORK, WATERWAYS

BIDS ASKED

Pennsylvania—B.A. 8/8—Dpt. Forest & Waters, 404 Education Bldg., Harrisburg, dredging Auburn Pool, Auburn Desilting Basin, Schuylkill River Desilting Proj., Schuylkill Co., dredging Kernsville Pool, Kernsville Desilting Basin, Schuylkill River Desilting Proj., Berks Co., $600,000 each. Plans deposit $50 each, Schuylkill River Proj., 20 S. 15 St., Phila., engr.

† Virginia and North Carolina—B.A. 8/15—U. S. Eng. foot of Front St., Norfolk, Va., construct Island Creek Dam, Biggs Island Reservoir Proj., Mecklenburg Co., Va., approx. 2 mi. southeast of Clarksville and approx. 24 mi. southwest of South Hill, and approx. 14 mi. north of Virginia-Carolina State line. Plans deposit $20. CD 8/3/44.

CONTRACTS AWARDED

† Louisiana—U. S. Eng., foot of Poydras St., New Orleans, Zone 9, 1,400,000 c. yd. channel improv., between Grand and White Lakes and 600,000 c. yd. channel excav., 3,500 lin. ft. dikes, Catfish Point Control Structure, Cameron and Vermilion Parishes, CIVENG 16-047-50-272, to McWilliams Dredging Co., Box 584, New Orleans, $596,190. Bids 6/13, awarded 7/17. CD 6/23, under LB.

† Virginia—U. S. Eng., foot of Front St., Norfolk, clearing parcels A, I and J, Biggs Island Reservoir Proj., CIVENG 44-110-50-69, to Volunteer Clearing Co., Nashville, Tenn., $614,895. Bids 5/9, CD 4/28.

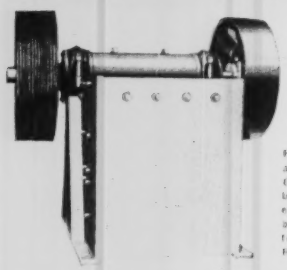
AIRPORTS

LOW BIDDERS

▲ Mass., East Boston—RUNWAY—Commonwealth of Mass., State Airport Management, Logan Airport, June 14, airport runway exten., etc., General Logan Airport, from V. Barletta Co., 10 Whipple Ave., Roslindale, $2,346,047, Thompson & Lichtner Co., Inc., 6 Alton Pl., Brookline, engr. CD 3/23.

ROGERS

GREATER CAPACITY
BY STAGED REDUCTION



Superior Long Service

JAW CRUSHERS

- 6 Primary Sizes
- 12 Secondary Sizes
- Sizes up to 32 x 40 In.

Rogers Jaw Crushers give you superior action and greater capacity from their extra long jaws. Greatly oversize bearings and shaft prevent breakdown and assure years of wear. Rogers equipment can be depended upon to give you better rock products at less cost. Write today for illustrated booklet with specifications on Rogers Jaw Crushers.

ROGERS IRON WORKS CO.

JOPLIN, MISSOURI

Diamond Core

Drilling

CORE BORINGS
for Foundations, Dams, Bridges and all Heavy Structures
GROUT HOLES

Tinney Drilling Co.
Grafton, W. Va.

35 Years' Experience

GUNITE CONSTRUCTION

Bridges, stacks, bunkers, pipe lining, steel encasement, repairs to disintegrated masonry, etc.

WE SPECIALIZE IN DAM REPAIRS

WHITE & McCOLL, INC.
75 WEST STREET
NEW YORK 6, N. Y.
Phone HAnover 2-0526

UNDERPINNING AND FOUNDATION CO
FOUNDED 1909

FOUNDATIONS

PILES - CAISSONS
UNDERPINNING
SHAFTS - TUNNELS
COFFERDAMS

No Job Too Large - None Too Small

ENGINEERS & CONTRACTORS
155 EAST 44th STREET, NEW YORK

CONTRACTS AWARDED

† Calif., Hamilton Air Force Base—RUNWAY—U. S. Eng., 180 New Montgomery St., San Francisco, runway rehabilitation at Hamilton Air Force Base. Spec. 04-293-50-116, to Lowrie Paving Co., 1755 Evans Ave., San Francisco, $365,692. Bids 6/22. CD 6/28, under LB.

Mass., East Boston—APPROACH ROADS—Commonwealth of Mass., State Airport Management, General Logan Airport, approach roads and appurtenant constr. for Logan Airport, to John McCourt Co., 910 Huntington Ave., Boston, $660,349. Bids 6/30, awarded 7/14. CD 7/11, under LB.

PUBLIC BUILDINGS

BIDS ASKED

N. Y., New York—HOUSING—B. A. 8/8—New York City Housing Auth., 63 Park Row, Zone 7, foundations and general constr., heating and ventilating, electrical work, plumbing for Stephen Foster Houses (Proj. No. NYS-30) Sect. 1, incl. bldgs. 1, 2, 3, 4, and 5 in area bounded by W. 114 St., 5 Ave., W. 115 St., Lenox Ave., and in area westerly portion of block bounded by W. 114 St., 5 Ave., W. 114 St., and Lenox Ave. Plans deposit $75, elevators, $25. Extended date. CD 6/28.

▲ Conn., New Haven—HOUSING—B.A. 8/9—City of New Haven Housing Auth., 195 Church St., 300 family unit 2-story brick Brookside Housing Springside Farm. Proj. No. MR 35. $2,900,000. Douglas Orr and Pedersen, Tilney & MacMaster, 111 Whitney Ave., and Joseph Della Valle, 153 Court St., New Haven, archts. CD 4/24.

Fla., Lakeland—HOUSING—B.A. 8/9—Lakeland Housing Auth., Lakeland, 220 housing units. Thomas V. Talley, Box 1105, Lakeland, archt. CD 7/14, under LB.

N. Y., Brooklyn—SCHOOL—B. A. 8/9—Supt. School Bldgs., Design & Constr., 44 Flatbush Ave. extens., Zone 1, general constr., plumbing and drainage, heating and ventilating, electrical equipment and fixtures for addns. to P. S. 149, Elm Ave. between E. 12 St. and Coney Island Ave. $906,800. Plans deposit $10, general constr., $6 each plumbing and drainage, electrical work and lighting fixtures, $7 heating and ventilating. CD 1/17.

R. I., Kingston—GYMNASIUM, etc.—B.A. 8/9—State of Rhode Island and Providence Plantations, purch. and, State House, Providence. Bid 66. Proj. 9180-A gymnasium and armory, Rhode Island State College. Approx. $700,000. Plans deposit $50. Gilbane Bldg. Sale, 793 Gardner Bldg., Providence, archt. CD 2/14/49.

▲ Mass., Lynn—HOUSING—B.A. 8/10—City Housing Auth., John Cavanaugh, chm., 58 Andrews St., 2 and 3 story 150 bldgs.) building Veterans Housing. Approx. $4,250,000. Plans deposit $100. A. J. Schumacher, 102 Mt. Auburn St., Cambridge, archt. CD 10/12/49.

▲ O., Cleveland—LIGHT POWER—B.A. 8/11—City, City Hall, at office Purch. Div., approx. 160x150 ft. brick, steel light power bldg. exten. E. 53 St. E. 49 Station. $2,600,000. Plans deposit $75. F. J. Schwamer Auditorium Bldg., engr. CD 7/13/44.

▲ Va., Fredericksburg—SCHOOLS—B.A. 8/11—At office L. J. Houston, Jr., city mgr., Fredericksburg. Walker Grant High School, $600,000. James Monroe High School, $550,000. Plans deposit $25 each. Williamson, Cole & Blanchard, Meison Bldg., Newport News, archts. CD 8/5/48.

LOW BIDDERS

▲ Md., Rockville—SCHOOL—Montgomery Co. Bd. Educ., July 20, 2 story rock brick limestone 30 classroom Eastern Suburban Junior High School, Old Bladensburg Rd. and Franklin Ave., from John Tester & Son, Inc., 1427 Eye St. N.W., Wash., D. C., $1,250,000. CD 7/14.

CONTRACTS AWARDED

▲ Mich., Detroit—HOUSING—City of Detroit Housing Auth., 400 Griswold St., 462 family dwelling units and maintenance bldg., boiler house, Edward J. Jeffries housing to Kuhn-Simmons Co., 1300 Penobscot Bldg., $5,520,000. CD 6/23, under LB.

Mass., Pittsfield—SCHOOL—City, School Dpt., Pittsfield, 2 story, 90x130 ft. brick, steel school at Eastment Connecticut and Brooks Aves. to Ley Constr. Co., 124 State St., Springfield, $792,520. Bids 7/7, awarded 7/12. CD 7/14.

† N. M., Los Alamos—WAREHOUSE—U. S. Atomic Energy Comm., Los Alamos, town maintenance warehouse to Haddock Engineers, Ltd. & Assoc., Santa Fe, $604,878. Bids 6/16. CD 5/10.

† N. M., Los Alamos—HOUSING—U. S. Atomic Energy Comm., Los Alamos, Group 14 housing 52 housing-force air heating, Sch. No. 2921, to Bill Stevenson Constr. Co., Los Alamos, $658,794. Bids 7/11. CD 6/14.

▲ O., Cincinnati—SCHOOL, etc.—Bd. Educ., 216 E. 9 St., high school addition, athletic field, to Penker Constr. Co., 1030 Summer St., $5,382,192. Est. $6,000,000. CD 5/18, under LB.

Tex., Galveston—LABORATORY—University of Texas, c/o Bd. of Regents, Austin, 3 story, buried, 94x216 ft. Bid Keeping, research superstructure laboratory to Knutson Constr. Co., Commerce Bldg., Houston, base bid $770,000. Bids 7/13. CD 6/13, under LB.

COMMERCIAL BUILDINGS

BIDS ASKED

▲ O., Euclid—HOSPITAL—B.A. & B.B.—Euclid Glenville Hospital, 701 Packard Dr., Cleveland, 6 story, basmt., 170 bed general hospital, $3,000,000. Conrad, Hayes, Simpson & Roth, Hanna Bldg., Cleveland, archts. F. Forbrich, Schofield Bldg., Cleveland, engr. CD 9/29/49.

▲ N. C., Durham—DORMITORY—B.A. About 9/1—Duke University, Durham, 3 story, dormitory for graduates, $1,000,000. CD 6/15.

† Tex., Fort Hood—HOUSING—Bids Asked—Dist. of Army, Fort Hood, construct, design and manage, 968 housing units. CD 2/6/49.

▲ T. H., Waikiki Beach—HOTEL—Bids Asked—Matson Navigation Co., 215 Market St., San Francisco, S. F. Calif., 7 story, 244 room hotel to be called Surf Rider. Approx. $1,000,000. Whitelaw & Cook, mechanical engrs., and Lindemer A. Daisy, 442 Post St., San Francisco, Calif., archts.

SOON LETS CONTRACT

▲ O., Cincinnati—OFFICE, etc.—The Procter & Gamble Co., Gwynne Bldg., 602 Main St., Cincinnati, soon lets general contract 200,000 sq. ft. floor space brick, steel, reinforced office and parking area. Contr. A. and garage and guard house. Contr. H. in Colerain Twp. $1,500,000. F. A. Fairbrother & George H. Marks, 345 New Center Bldg., Detroit, Mich., archts. Albert Kahn Assoc. Associated Architects & Engineers, Inc., 345 New Center Bldg., Detroit, Mich., engr. CD 11/20/48, under Venice.

CONTRACTS AWARDED

▲ D. C., Wash.—APARTMENT—Standard Constr. Co., 1010 Vermont Ave., N.W., 137 unit brick veneer apartment, 4301 Massachusetts Ave., N.W., owner builds. Approx. $3,000,000. Awarded 7/12. Corning & Moore, 1726 N. St., N.W., archts.

Calif., Los Angeles—DWELLINGS—Grandview Bldg. Co., 470 S. Beverly Dr., Beverly Hills, 216 stucco dwellings, Keystone St., Lincolnglade and Myers Aves., Exeter Bullos, $902,800. Allen Siple, 9307 Santa Monica Blvd., archt.

▲ O., Hamilton—RESIDENCES—John C. Hicks, 375 Columbia Ave., 100 one and one-half frame residences, Columbia Heights, $1,500,000, and 28 one story frame residences, New St., $280,000, separate contracts.

INDUSTRIAL BUILDINGS

BIDS ASKED

O., Lockland—PLANT—B.A. 8/11—The Gardner Board & Carton Co., Walter S. Fry, vice pres. and mgr., 497 Charles St., Middleton, 1 story, part basmt., 283x440 ft., brick mfg. plant incl. warehouse, yard and paving room, $800,000. Carl A. Martin, 1 Nast Bank Bldg., Middletown, archt. Emery J. Ohler, 1310 Hulman Bldg., Middletown, assoc. archt. Schweiger Heapy & Assoc., Winters Bank Bldg., Dayton, archts. CD 2/28.

Tex., Dallas—PLANT—Bids Asked—United States Envelope Co., 21 Cypress St., Springfield, Mass., 50,000 sq. ft. floor space envelope mfg. plant, $600,000. CD 8/25.

Calif., Los Angeles—MARKET—Boys Market Inc., 5531 Monte Vista, 130x200 ft., rein.-con. brick market, 3670 Crenshaw Blvd., to Ted R. Cooper Co., Inc., 149 W. 22 St., $296,037. Stiles Clements, Van Nuys Blvd., archts.

Calif., Los Angeles—WAREHOUSE—J. B. Ketchum, 2221 E. Washington St., 120x210 ft., warehouse, to P. J. Walker Co., 1900 Whiteside Ave., $100,000. Parkinson, Powelson, Briney Bernard, Woodford, 420 N. La Brea St., archts.

Ga., Thomaston—WAREHOUSE, etc.—Upson County Electric Membership Corp., Thomaston, warehouse and office, to Perry Lamar Constr. Co., Thomaston, $75,000. Bids 7/17. CD 7/17.

Ga., Valdosta—PLANT—Valdosta Coca-Cola Bottling Wks. c/o Lloyd Greer, archt., 105 E. Ann St., bottling plant, to Triangle Constr. Co., P. O. Box 372, Greenville, S. C. Approx. $75,000.

Ill., Skokie—FACTORY—Powers Regulator Co., Dakton St. and St. Louis Ave., 1 and 2 story, 130,000 sq. ft. steel, brick, concrete factory, to E. H. Mueller Co., 505 Lake Shore Dr., Chicago, Zone 19, $750,000. Awarded 7/12. CD 6/20.

Ind., East Chicago—PLANT—General American Transportation Co., 121 and Front St., 60,000 sq. ft. floor area plant addn. to expand present plant to 210,000 sq. ft., etc. Cost with equip. $750,000.

Md., Baltimore—GARAGE—Arcade Parking Lot Co., Inc., 16 W. Saratoga St., 6 story, 24x140 ft., rein. con. parking bldg., to Bartlett Contractors, Inc., 711 S. Central Ave., $123,900. Saxe, Wittner & Robertson, 130 W. Hamilton St., engrs.

Mass., Boston—WAREHOUSE—Leon Roebuck & Co., 4630 Roosevelt Blvd., Phila., Pa., 1 story, brick, 140,000 sq. ft. warehouse, to Thomas Grossner & Co., Inc., 248 Main St., Cambridge, approx. $250,000. CD 7/26.

Missouri—PLANT—Northeast Missouri Electric Power Co-operative, N. M. Boudreaux, gen. mgr., Palmyra, Sect. 7 B, building work, main steam power plant of South River Steam Plant, to LaCrosse Dredging Corp., 312 S. Michigan Ave., Chicago, Ill., $805,720. Bids 6/20. CD 7/14 under LB.

FOR YOUR 7 TO 13 H.P. POWER JOBS

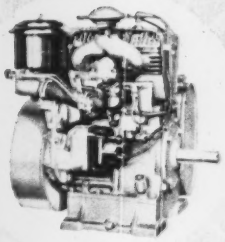
Two-Cylinder

WISCONSIN

Heavy-Duty

Air-Cooled

ENGINES



Models TE and TF standard engine illustrated; also available as complete Power Units with Clutch Take-Off Assembly or with Clutch Reduction Assembly.

Designed and built to traditional Wisconsin Motor heavy-duty service standards, this pair of Air-Cooled 2-cylinder engines provide ideal power either as component units on original equipment, or as stationary or portable general purpose power within the 7 to 13 hp. bracket.

The Model TE delivers from 7.2 to 11.2 hp. and the Model TF turns up 8.6 to 13.3 hp. within a 1400 R.P.M. to 2600 R.P.M. speed range. Features include: tapered roller bearings at BOTH ends of the heat-treated, drop-forged crankshaft; high tension rotary-type OUTSIDE Magneto with impulse coupling; oil bath air cleaner; ¾" standard float feed carburetor; positive lubrication by Pump with individual oil stream to each rod . . . *plus* dependable air-cooling at all temperatures from sub-zero to 140° F.

For "Most H.P. Hours" of on-the-job power service, specify Wisconsin Air-Cooled Engines . . . single cylinder, 2-cylinder and 4-cylinder, in a complete power range from 3 to 30 hp.

WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 14, WISCONSIN

Keep DOOR efficiency in step with Plant Efficiency!

Install KINNEAR Rolling Doors

Moving raw materials in and finished products out of the plant simply and quickly is as important as maintaining top plant production. For that reason KINNEAR ROLLING DOORS are today installed in hundreds of plants. With the touch of a button, KINNEAR motor-operated doors go into action, coiling upward above the lintel—completely out of the way! When closed they supply a solid barrier against theft and the elements. Give "bonus years" of service plus added all-round door efficiency. Write for 40-page catalog today!

The KINNEAR Manufacturing Co.

1820-40 Fields Ave., Columbus 16, Ohio

1742 Yosemite Ave., San Francisco 24, Calif.

Offices and Agents in Principal Cities

Saving Ways in Doorways

KINNEAR ROLLING DOORS

construction

STEEL

Quick Delivery

Nearby Stocks Include:

REINFORCING BARS and accessories

STRUCTURALS—channels, angles, beams, etc.

PLATES—sheared and U M., Inland 4-Way Floor Plate

SHEETS—many types & coatings

TUBING—incl. welded structural

EXPANDED METAL—std. & flattened

STEEL SPIRALS, CAISSON RINGS, ETC.

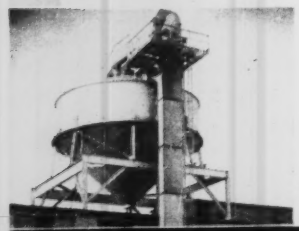
RYERSON

Joseph T. Ryerson & Son, Inc. Plants at: New York, Boston, Philadelphia, Detroit, Cincinnati, Cleveland, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Los Angeles, San Francisco.

PITTSBURGH
·DES MOINES

ELEVATED STEEL BINS

For the economical and efficient storage of any free-flowing dry material — built in types and sizes suited to your particular need. *Let us consult with you.*



PITTSBURGH · DES MOINES STEEL COMPANY

Pittsburgh, Pa. . . . . 3414 Neville Island
Des Moines, Ia. . . . . 915 Tuttle Street
Santa Clara, Cal. . . . . 621 Alviso Road

GRIFFIN

RIFFIN

WELLPOINT SYSTEMS

JETTING PUMPS

Distributors

GRIFFIN ENGINEERING CORP.
2016 E. Adams St.,
JACKSONVILLE, FLA.

GRIFFIN EQUIPMENT CO., INC.
548 Indiana Street,
HAMMOND, INDIANA

GRIFFIN WELLPOINT CORP.
881 EAST 141st ST. • NEW YORK 54, N. Y.
Phones: Mellrose 5-7704-5-6

N. C., Fayetteville—TERMINAL—Queen City Coach Co., c/o contr., bus terminal, to Southern Builders, Inc., Fayetteville. Cost $68,000.

N. D., Velva—GENERATING PLANT—Central Electric Power Co-operative, Velva, foundation for plant approx. 5,500 yd. concrete to F. H. McGraw Co., 104 N. Wabash St., Chicago, Ill., $183,170. CD 12/23/49.

N. Y., Dobbs Ferry—LABORATORY—Stauffer Chemical Co., 420 Lexington Ave., New York, 1 story, structural steel, waterproofed brick veneer walls, concrete block research laboratory, to H. K. Ferguson Co., 19 Rector St., New York.

Pa., Erie—POWER PLANT—Pennsylvania Electric Co., Johnston, substructure for 125'x228'x100 ft. steel, asbestos sheet and masonry power plant addn. to Sessinghaus & Ostergaard, Inc., 1115 Peach St., $500,000. CD 4/3.

S. C., Charleston—PLANT—South Carolina Electric & Gas Co., Columbia, (3rd unit) steam generating plant, Hollood, near here, to Standard Constr. Co., 15 11 St., Columbus, Ga., $407,000. Awarded 7/18. CD 5/26.

S. C. Charleston—POWER PLANT—South Carolina Power Co., c/o contractor, plant to house electric generating unit, to Southern Constr. Co., 1235 Reynolds St., Augusta, $407,000. CD 12/30.

Utah, Salt Lake City—WAREHOUSE, etc.—Utah Power & Light Co., Kearns Bldg., construction warehouse and office to Jacobsen Constr. Co., 724 S. 3 East St., Approx. $500,000. Bids 6/16. CD 3/14, under Commercial Bldgs.

UNCLASSIFIED

BIDS ASKED

Va., Charlottesville—STEAM DISTRIBUTION—B.A. 8/10—At office Evans E. Harbert, M. D., Supt. and Medical Dir., Blue Ridge Sanatorium, Charlottesville, relocation portions underground steam distr. sys. at Blue Ridge Sanatorium. Plans deposit $10. Miller & Morse, Box 1844, University Station, Charlottesville, consult. engrs.

† Ind., Terre Haute—TRACK RELOCATION, etc.—B.A. 8/8—Contracting office N. Terre Haute Ordnance Depot, North Routing, Terre Haute, removing approx. 2,100 lin. ft. railroad track and four No. 8 turnouts, installing approx. 1,650 lin. ft. railroad track and four No. 8 turnouts, incl. grubbing, grading, etc., in Storage area, Terre Haute Ordnance Depot.

† South Dakota—SWITCHYARD, etc.—B.A. 8/10—Bureau of Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars, local, outdoor switchyard, incl. power distr. and instrument transformers, and outdoor disconnecting switches, power and lighting cabinets, supporting steel structures, etc., for the Angostura Switchyard, Cheyenne Div., Angostura Unit, Missouri River Basin Proj., Spec. 4127. CD 7/30/45.

LOW BIDDERS

Colorado—RURAL DISTRIBUTION LINES—K. C. Electric Assn., Hugo, 108.57 mi. 60 kv rural distr. lines and erecting 5 substations, Kit Carson and Cheyenne Counties, from R. E. Mattson Co., Box 498, Britton, Okla., $466,836. CD 6/19.

Fla., Tallahassee—ELECTRIC TRANSMISSION LINES, etc.—City electric transmission lines from main plant at St. Marks, to W. B. Lumpkin & Sons, 1st National Bldg., Birmingham, Ala., $508,672; extend city's electric distr. sys., from Harrison-Wright Co., Inc., 116 W. 3 St., Charlotte, N. C., $192,732.

La., New Orleans—WHARF—Bd. Comrs. Port of New Orleans, contr. of July 17, reconstr. Erato St. Wharf, from Pittston Contg. Co., 2925 Franklin Ave., $149,541. CD 7/7.

Mass., Watertown—FIELD HOUSE—Town, Stadium Comm., Watertown St., City Hall, 3 story, brick, field house, from Paramax Constr. Co., Inc., 739 Boylston St., Boston, $70,944.

Missouri—PLANT—Northeast Missouri Electric Power Co-operative, M. W. Houpes, genl. mgr., Palmyra, Sect. 20, Sect. 28, building addn. main steam power plant of South River Steam Plant, from Lacrosse Dredging Corp., 410 South Michigan Ave., Chicago, Ill., $805,720. CD 6/9.

North Dakota—RURAL DISTRIBUTION LINES—Three County Electric Co-operative, Carrington, July 6, 647 mi. rural distr. lines, Eddy, Kidder, Stutsman and parts Counties, from T. A. Gratton, 2125 Aldrich Ave. S., Minneapolis, Minn., $578,033. CD 6/24.

†Washington—SUBMARINE CABLE—Cross Power & Light Co., Orcas, selected bids June 16, 10,000 ft. submarine cable between Orcas and Shaw Islands and between Shaw and Lopez with terminal structure and power line to Shaw, to Pacific Marine Ways, Inc., Seattle, $78,046. New bid date June 24. CD 7/7, under LB.

CONTRACTS AWARDED

Ill., Plano—DRIVE-IN THEATRE—Kenneth Theatres, Inc., Kenneth Ives, pres., 100 Kenneth Bldg., Spring Valley, Ill., to Rex Drive-in Theatre Inc., Route 71, about 1½ mi. from intersection of Route 29, north and east, to Jones Constr. Co., Lawrenceville, approx. $200,000.

Iowa—RURAL DISTRIBUTION LINES—Co-operative Electric Co., E. J. Vandemeulebroeke, mgr., St. Ansgar, 84 mi. rural distr. lines, sys. improv., etc., to Mitchell Co., Inc., Osage, $141,000. CD 6/30.

Ia., Ames—POWER SYSTEM IMPRVS., City, City Hall, power sys. imprvs., incl. 9 mi. transmission lines, rebuilding circuits, 2 sub-station, Contr. 21 to Commonwealth Electric Co., 1401 Y St., Lincoln, Neb., $88,904. Bids 6/19. CD 6/2.

Miss., Waynesboro—NATURAL GAS PIPE LINE—City, natural gas pipe line from point north of Quitman into Waynesboro, to Hyde Constr. Co., Inc., 80 W. Jackson, Miss., and Miss.-La. Pipeline Co., Baton Rouge, La., $607,195.

† N. J., Fort Monmouth—FIELD HOUSE—U. S. Eng., 80 Lafayette St., New York 13, N. Y., field house, No. Eng. 39-075-50-232, to Gumina Building & Constr. Co., Carch Ave., New Brunswick, $565,107. Bids 6/29. CD 7/11, under LB.

N. Y., Idlewild—DRIVE-IN THEATER—New York International Airport Drive-In Theatre, Inc., 270 Park Ave., New York, Zone 17, drive-in theatre on 20-acre site, Conover Ave. and Jefferis Blvd., separate contracts, $400,000. S. H. Taylor & Drive-In Theatre Service Co., 849 Cooper St., Camden, N. J., archts., Lorimer & Rose, 254 W. 54 St., New York, Zone 22, consult. archts.

N. Y., Kings Park—TUNNEL—Dpt. P. Kks., Albany, general contract addnl. supports for tunnel top, Kings Park State Hospital, to McAndrew Constr. Co., 120 Liberty St., New York, $124,400.

Okla., Oklahoma City—STUDIO—WKY Studio, Skirvin Tower Hotel, June 2, studio for WKY Radio Station, Britton Rd. and Santa Fe Ave., Okla. City, J. Bollinger, Contr. Co., Braniff Bldg., Zone 2, archts., $457,667. Est. $450,000. Awarded 7/12. Parr & Aderhold, Hales Bldg., Zone 2, archts.

† Oregon—TRANSMISSION LINE—Bonneville Power Admin., 827 N. E. Oregon St., Portland, construct Maupin-Detroit 230 kv transmission line, Marion and Wasco Counties, 104 mi., to Pacific Wagman Co., Builders Exchange Bldg., Portland, $256,961. Awarded 7/10.

† Oregon—TRANSMISSION LINE—Bonneville Power Admin., 827 Oregon St., Portland, Zone 8, 21.8 mi. Marion-Keeler 115 kv transmission line, Clackamas Co., Inc. No. 5244 to Power City Electric Co., N. 926 Howard St., Spokane, $79,795. Bids 7/11, awarded 7/14. CD 6/28.

Oregon—RURAL DISTRIBUTION LINES—West Oregon Electric Co-operative, 622 Bridge St., Vernonia, 89.1 mi. single phase 7.2 kv rural distr. lines, Columbia, Washington, Yamhill and Clatsop Counties, to Hughes Electric Co., W. 4th Ave., Spokane, Wash., $149,887. Bids 7/11. CD 6/28.

Pennsylvania—GUARD RAIL—Pennsylvania Turnpike Comm., 511 N. 2 St., Harrisburg, erecting guard rail and construct shoulder curbing and drainage 113 mi. on Pennsylvania Turnpike System, from Middlesex to King of Prussia and from Irwin to Monroeville, 350,900 lin. ft. guard rail erection and painting, 248,500 lin. ft. wood shoulder curb, to Hendles & Mosby, 6100 N. 20 St., Phila., $533,039. Bids 6/28. Awarded 7/13. CD 6/2, under LB.

† Pa., Phila.—DISTRIBUTION SYSTEM—U. S. Dpt. Navy, Phila. Wks. Office, Phila. Naval Base, electric power distr. sys., NOY 21870, to Electric Power Constr. Co., 3958 Pulaski Ave., Phila., $60,084. Commander H. F. Curren, c/o owner, Officer in Charge.

South Dakota—RURAL DISTRIBUTION LINES—Cherry-Todd Electric Co-operative, Inc., Valentine, 940 mi. rural distr. lines, Todd Co., to J. R. Forrey, 702 Nat. Bank of Topeka Bldg., Topeka, Kan., $534,706. CD 1/26. Under LB.

Texas—RURAL DISTRIBUTION LINES—Floyd County Rural Service Co-operative, Inc., 235 W. California St., Floydada, 11 mi. 69 kv transmission line, 83.3 mi. rural distr. lines and sys. improv., Floyd Co., to F. J. Seastrunk Electric Co., Inc., P. O. Box 329, Columbia, S. C., $432,706. H. N. Roberts & Assoc., 1310 Avenue Q, Lubbock, engrs. CD 5/16/49.

Texas—RURAL DISTRIBUTION LINES—Medina Electric Co-operative, Inc., Hondo, 381.1 mi. rural distr. lines, Medina Co., to Wallace Pipeline Corp., 1260 Nueces St., Sherman, Texas, quarter-sec. basis, $103,808. Quarter-sec. Total $484,808. Southwest Engineers Inc., 510 Transit Tower, San Antonio, Zone 5, engrs. CD 12/12.

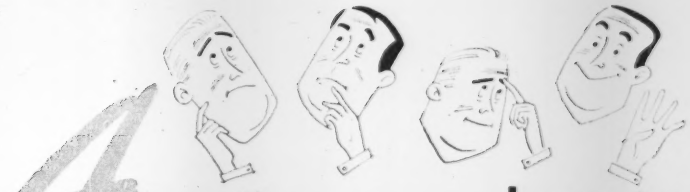
Texas—RURAL DISTRIBUTION LINES—Midwest Electric Co-operative, Inc., Roby, 120.83 mi. rural distr. lines and sys. improv., Fisher Co., to W. J. Thomas & Co., P. O. Box 7006, Dallas, Zone 4, $118,766. H. N. Roberts & Assoc., 1310 Avenue Q, Lubbock, engrs. CD 6/20.

Tex., Houston—SWIMMING POOL, etc.—Spring Valley Athletic Club, Houston and Spring Valley Rds., Swimming pool, wading, diving pools, 2 bathhouses, pump-house, $62,000.

Washington—RURAL DISTRIBUTION LINES—Chelan County Electric Co-operative, Inc., Leavenworth, 18.9 mi. rural distr. line and sys. improv., Chelan Co., to Earnest Constr. Co., P. O. Box 463, Moses Lake, Wash., $76,893. Verne E. Ashley, 1005 Bancroft Ave., Coeur D'Alene, Idaho, engr. CD 5/20/49.

B. C., Vancouver—STREET LIGHTING—City, 532 W. 12 Ave., installing ornamental street lighting on 41 Ave. from Granville to Oak St., Granville St. from 41 Ave. to Marine Dr., Marine Drive Extension from Granville to Ontario St., on 18, 19, 20, 22, 23 and 24 Aves. from Cambie St. to Ontario St., to J. H. McRae Co., Ltd., 2214 Cambie St., Vancouver, $90,000. Awarded 7/12. CD 9/28/43.

Que., Arvida—TELEPHONE LINES—Saguenay-Quebec Telephone Co. Ltd., Chicoutimi, telephone lines, to W. Rourke Ltd., 2 Chaureau St., Quebec City, $100,000.



4 questions every dump truck user should ask about new International 6-wheelers

QUESTION: "I hear new Internationals are heavy-duty engineered. What does that mean to me?"

ANSWER: "Heavy-duty engineered" means that extra stamina and durability are built into every one of the thousands of parts that go into new International 6-wheel Trucks. This gives you the long life and savings in operation and maintenance that have kept Internationals first in heavy-duty truck sales for 18 years.

QUESTION: "What other assurance do I have that new International 6-wheelers will do a good job on *my* particular job?"

ANSWER: From new valve-in-head engine to new bogie assembly, every new International 6-wheel Truck is *specialized* for years and years of outstanding 6-wheel truck performance. In addition, every model has been *proved* right from every standpoint in actual 6-wheeler operation.

QUESTION: "What do new Internationals offer in the way of new advancements?"

ANSWER: You get the new Comfo-Vision Cab—"roomiest cab on the road." You get the new third differential that eliminates the need for an extra propeller shaft and a power divider, thereby reducing truck weight. You get new Super-steering and new Super-maneuverability for easier handling and turns in the shortest practical circle. You get a new valve-in-head engine, new frame, new improvements from bumper to tail light.

QUESTION: "Where can I find out *more* about how new International 6-wheel Trucks will cut my hauling costs?"

ANSWER: Get in touch with your nearest International Truck Dealer or Branch. He'll gladly give you facts and figures on the right 6-wheel model for you.

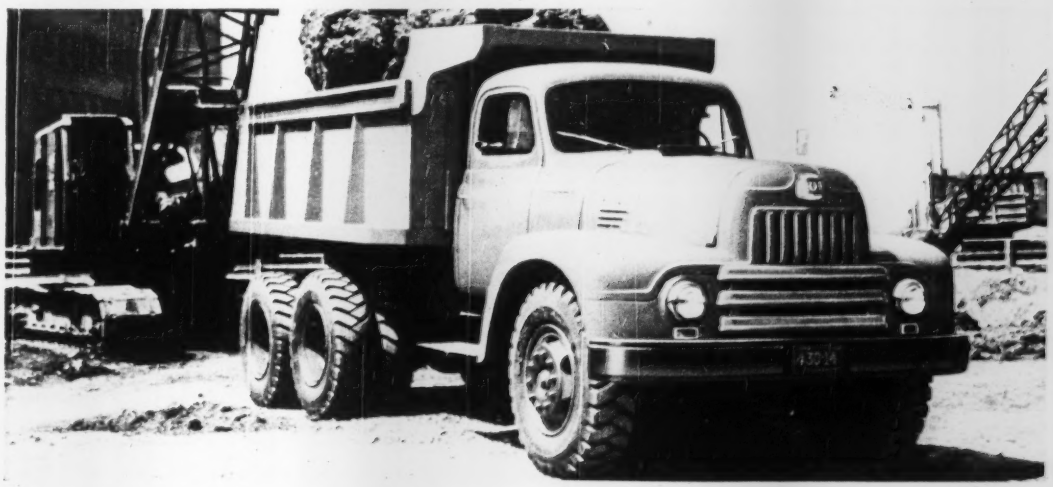
International Harvester Builds McCormick Farm Equipment and Farmall Tractors... Motor Trucks Industrial Power... Refrigerators and Freezers

Tune in James Melton and "Harvest of Stars," NBC, Sunday afternoons

ALL NEW, ALL PROVED

INTERNATIONAL TRUCKS

INTERNATIONAL HARVESTER COMPANY CHICAGO



PROPOSED PROJECTS

WATER SUPPLY

Ill., McLeansboro—City, City Hall, approved $300,000 bond issue, WW sys., sewers, improv. and extens.

▲ Miss., Natchez—City, voted $2,400,000 bonds, water and sewer improv. CD 6-25.

N. J., South Orange—South Orange Rd. Trustees, addnl. improv. to water sys., $350,000.

Tex., Dalhart—City, voted bonds, WW sys. improv. & extens., $175,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., consult. engrs.

Tex., Odessa—Colorado River Municipal Water Dist., Big Spring, 75 mi. pipe line main from point in Martin Co. to limits of Odessa, $700,000. Freese & Nichols, 407 Dancigar Bldg., Fort Worth, consult. engrs.

Tex., Pasadena—City, C.I. water lines, facilities, $230,000. George A. Smith, engr.

Alta., Edmonton—Municipality, west end feeder main, $268,750. R. Mount, Edmonton, City engr.

SEWERS, WASTE DISPOSAL

Ill., Murphysboro—City, C. A. Hart, mayor, City Hall, sewage disposal plant with auxiliaries, appurtenances on Big Muddy River and trunk extens., intercepting sewer, etc., Approx. $400,000. Fulton Eng. Co., 3209 Brown Rd., Overland, St. Louis 14, Mo., consult. engr.

Ind., Jeffersonville—City, storm and sanitary sewers, sewage treatment plant, $400,000. Boyd E. Phelps, 1000 Washington St., Michigan City, consult. engr.

▲ Ind., Muncie—City, City Hall, sewage treatment plant, incl. expansion present plant, $2,000,000. Havens & Emerson Co., Leader Bldg., Cleveland, consult. engrs. CD 11/20-46.

Mo., W. Vinita Park (St. Louis 14, P. O.)—Village, C. A. Ermes, mayor, 8205 Jackson Ave., Zone 14, $200,000-$250,000 bond election Sept. 15, storm and sanitary sewerage sys. ED 3-21.

▲ O., Cincinnati—City, City Hall, sewage plant, $4,000,000. Havens & Emerson Co., Leader Bldg., Cleveland, consult. engrs. CD 7-13-46.

O., Girard—City, sewage disposal plant, sanitary sewers, W. State St. near Trumbull Rd., $480,000. Floyd Brown & Assoc., Marion, consult. engrs. Brooks D. Church, city engr. CD 12-14-49.

▲ Wash., Everett—City, City Hall, bond election Nov. 7, sewage treatment and disposal sys., $2,000,000. C. O. Phemister, city engr.

Ont., Kitchener—Municipality, City Hall, enlarging Spring Valley sewage plant, $237,000. S. Stuart, Kitchener, city engr.

BRIDGES

N. C., Charlotte—City, Henry Yancey, City engr., City Hall, underpass at Tuckaseegee Rd. railroad tracks, 1/4 mi. east of Wilkinson Blvd. Approx. $300,000. Frank Lyon, Asheville, consult. engr.

Tex., Beaumont—City, bond election Aug. 12, viaduct, $750,000. R. C. Black, city engr.

▲ Wash., Yakima—City, City Hall, bridge over railroad tracks at Lenox Ave., $1,000,000. H. Hartley Siebrand, Smith Bldg., Seattle, Zone 1, consult. engr. R. Gay, city engr.

STREETS AND ROADS

Calif., Watsonville—City, City Hall, paving, $1,200,000 bond issue.

Colo., Denver—City and County, City and County Bldg., concrete curbs, gutters, curb walks, asphaltic concrete pavement and other street improvements, Dist. 161, A. Alta, $50,000. C. C. Hoffman, Jr., dentist, Empire Bldg., Alta, dentist, engr. Zone 1, $50,000.

N. J., Newark—City, various streets, bridges, etc., $79,000—paving Wayne & Jackson Sts., $77,590—South Orange Ave., Sanford Ave., $77,590. CD 12-27-44.

Okla., Muskogee—City, paving, A. E. Hughes, city engr., $540,000. Bituminous surface treatment, $40,000. Asphalt patching, $50,000.

▲ Tex., Beaumont—City, bond election Aug. 12, paving and improving navigation street and thoroughfares, $800,000; elimination Magnolia grade crossing, $1,000,000. R. C. Black, city engr. CD 7-21-49.

Tex., McAllen—City, G. W. Dunn, manager, McAllen city-wide street paving, improv., $500,000. James V. Allred, Atty. Gen., Transit Tower, San Antonio, consult. engr. CD 4-27-50.

Wash., Seattle—King Co., Seattle County City Bldg., Zone 4, c. conc. paving 144 St. (Military Rd. to 53 St.), $50,000; Ambaum Rd. (Five Corners to Des Moines Rd.), $50,000; c. conc. surf., 1.5 mi. E. 175 St. from Primary State Hy. 2 at S. E. 80 St., Mercer Island, $50,000; bit. surf. Dist. 2, $300,000; constr. 5.04 mi. Dist. 3, $118,500; light bit. surf., 41.9 mi. Dist. 3, $125,700; road-mix surf., 13.29 mi. Dist. 3, $79,500. D. L. Evans, Seattle, engr.

Wash., Spokane—City, City Hall, paving Everett, Rowan, Queen, Wabash, Sanson, Crown, Olympic, Broad, A, Division, Waterford, Cannon, Elm, Oak, Ash, Perry and Atlanta Sts., in northeast part of City, $302,394. C. E. Davis, city engr.

EARTHWORK, WATERWAYS

Tex., Beaumont—City, bond election Aug. 12, filling Neches River Turning Basin to provide traffic outlets, $500,000. R. C. Black, city engr.

Tex., Plainview—Hale County Water Dist., Plainview irrigation proj., $500,000.

AIRPORTS

▲ Tex., San Antonio—AIRPORT ADMINISTRATION BLDG.—City, City Hall, Military Plaza, plans by Atlee B. & Robert M. Ayres, Transit Tower, Bldg., airport administration bldg., $700,000-$1,000,000; Leigh Foster & Assoc., South Bend, Ind., engrs.; Frank T. Drought, 117 W. Pecan St., consult. engr. CD 3-10.

LATIN AMERICA

Mexico, Nuevo Laredo—Mexican Govt., Secr. de Bienes Nacionales (National Properties Ministry), Mexico, D.F., plans WW, sewerage, irrigation, drainage sys., $4,650,000. CD 6-19-46.

PUBLIC BUILDINGS

Calif., Baldwin Park—SCHOOL—County Union High School Dist., County plans by Frederick Kennedy, Jr., 1041 E. Green St., Pasadena; Baldwin Park High School, homemaking, and administration bldgs., $720,000.

▲ Calif., Fresno—HOUSING—Housing Auth. of City of Fresno, City Hall, plans by R. W. Stevens, 756 Pine St. & Benjamin Liptold, Mason Bldg., 170 unit housing, $1,000,000.

Calif., Porterville—HOSPITAL—Sierra View Hospital Dist., Porterville, voted $385,000 bonds, hospital, $750,000. Stone & Malley, 614 California St., San Francisco, archts. CD 5-24.

▲ Calif., Stockton—LIBRARY—City of Stockton, City Hall, plans by Peter J. Pfau, 130 N. Commerce St., Stockton, $1,150,000. CD 1-4.

▲ Conn., Stratford—SCHOOL—Town Bd. Educ., Roland F. Lyon, Jr., plans by G. Wellington Walker, 114 State St., Bridgeport, and Andrew G. Patrick, 2503 Main St., Stratford, 2 story, brick, steel, concrete, junior High School, Nichols Ave., $1,000,000; concrete, steel junior High School, Shuttland Terrace, $500,000. CD 4-19-50.

▲ Ga., Columbus—HOUSING—Columbus Housing Auth., 144 Lawyers Bldg., & William B. Tabb, archt., 144 Wynnton Rd., 465 housing units, $4,000,000. CD 12-22-49.

▲ Ill., Charleston—AUDITORIUM, etc., plans by Eastern Illinois State College, Charleston auditorium, $1,500,000; industrial education and service bldg., $1,500,000; women's health education bldg. and swimming pool, $1,225,000; remodeling Pemberton Hall with new wing for infirmary and 4 story apartments, $750,000; training school for nursery, kindergarten, school and public high with educational clinics, $2,325,000.

Ind., Wabash—SUBSTATION, Public Service Co. of Indiana, Inc., sub station on 1/4 acre tract, $100,000 with land.

Ia., Dubuque—SCHOOL, Bd. Educ., Dubuque, voted $600,000 bonds, school.

Ky., Louisville—City-County Civic Bd. Educ., to end Hickory Ave. by D. K. Maltz & Bros., Realty Trust Bldg., negro elementary school, $800,000. Joseph & Joseph & Arthur, Third St. Concord, archts.

Ky., Madisonville—HOSPITAL, Madisonville Memorial Hospital Assn., plans by H. Lawrence Gilbert, Memorial Bldg., 2 story & basement, brick, 100 beds, $400,000. Howard & Hopkins, Madisonville, archts. engrs. CD 12-19-49.

Ky., Paris—SCHOOL, Bd. Educ., Paris, plans by Fayette W. Dunn, Inc., 1432 S. Main St., Lexington, 2 story, brick, steel, concrete, high school, $600,000. CD 2-24-50.

Mich., Flint—SCHOOL, Bd. Educ., Flint, plans by Edward M. Smith, Asst. Sec., 1202 Francis Palms Bldg., Detroit, 22, Genesee (Twp.) City School, $700,000.

▲ N. J., Phillipsburg—DWELLINGS—Phillipsburg Housing Auth., plans by Clarence S. Kelly & Gruzen & Aronovici, New York, N. Y., 150 dwellings, 2 & 3 story one site bordering Roseberry St., $1,772,000.

N. J., Trenton—SCHOOLS, Bd. Educ., 4 S. Stockton St., plans by Molenwright & Mitchell, Taylor Bldg., for Monmouth Elementary School, $250,000; Parker Elementary School, $250,000. CD 1-27-50.

N. Y., Newburgh—SCHOOL—City, Gardnertown School addn., $250,000.

N. Y., Yonkers—SCHOOL—City, Colonial Heights School, $450,000.

O., Kent—SCHOOL—Bd. Educ., Kent, $850,000 bond election Nov. 7, replace Central School, addn. of combustion gymnasium-auditorium to both South and Depeyster Schools.

▲ O., Toledo—HIGH SCHOOL—Bd. Educ., Washington Twp., 330 Whittier Dr., Zone 12, $1,500,000 bond election Sept. 19, Junior High School, CD 5-9.

O., Yellow Springs—SCHOOL, Bd. Educ., Yellow Springs, plans by E. C. Lamberg & Assoc., 114 Garfield Pl., Cincinnati, school, M.H. Lawn in center of village, $270,500. CD 3/30.

▲ Tex., Dallas—SCHOOLS—Dallas Independent School Dist., Axard and Royal Sts., plans by Clifford J. Lane, 4801 Lemmon Ave., New West Dallas School for Negroes, $600,000; plans by Tatum & Quade, 2612 Fairmount St., Stonewall Jackson School, addn., $250,000; plans by Max Lemmon, 1215 Main St., Pleasant Mound School addn., $450,000; plans by J. A. Pitzinger & Assoc., So. Life Bldg., Jr. C. Frazier School addn., $600,000; plans by Wm. St. Richter Construction Bldg., J. L. Long Jr. High School addn., $400,000; plans by Wiltshire & Fisher, 4703 Ross Ave., Boude Storey Jr. High School addn., $750,000. CD 10-6-49.

Tex., Eagle Lake—SCHOOL, Eagle Lake Independent School Dist., Eagle Lake, plans by Page, Southerland & Page, 602 West Ave., Austin, school, $400,000. CD 6-5.

† Tex., Port Neches—PLANT, Reconstruction, Firance Corp., Port Neches, reconditioning, remodeling, portion synthetic rubber plant, $250,000. U. S. Rubber Co., Port Neches, operators.

Wash., Everett—SCHOOL—School Bd., Everett, $1,000,000 bond election Nov. 7, Baker Heights School, etc., $400,000.

▲ Wyo., Laramie—LIBRARY—University of Wyoming, Laramie, approx. 60,000 sq. ft. library and 13,000 sq. ft. infirmary, $1,650,000.

N. B., Fairville—SCHOOL, School Dist. 83, Fairville, 3 story, brick, concrete, structural steel, school, $400,000.

Ont., Peterborough—COLLEGIATE—Bd. Educ., J. Hugh Ainsley, Peterborough, plans by J. Roy Perry & Assoc., 211 Dundas St., Toronto, Junior Collegiate near Monaghan Rd. and Cameron St., Approx. $550,000. CD 12-11-46.

Sask., Nipawin—HOSPITAL, Junior Hospital Bd., Nipawin, 50 bed hospital addn., $250,000.

Sask., Saskatoon—SCHOOL—Public School Bd., Saskatoon, school, 4 Ave., $250,000.

COMMERCIAL BUILDINGS

Ala., Phenix City—HOMES—Frederick Douglas Homes, c/o Lorin D. Raines, archt., 2443 Wynnton Rd., Columbus, Ga., 82 homes, $820,000.

▲ Ala., Phenix City—APARTMENT UNITS, Riverview Court Apartments, c/o Lorin D. Raines, 2443 Wynnton Rd., Columbus, Ga., 168 apartment units, $1,680,000.

▲ Calif., Belmont—RESIDENCES—John M. Johnson, 220 Hazel Ave., Millbrae, 90 residences in Belmont Heights, $1,250,000.

▲ Calif., Los Angeles—HOSPITAL—Mount Sinai Hospital, 931 N. Crescent Heights Pl., 13 story hospital, Beverly Blvd., $1,000,000.

Calif., San Diego—BANK, San Diego Federal Savings & Loan Assn., 1027 6 Ave., bank, $500,000.

▲ Calif., San Diego—STORE, Sears, Roebuck & Co., 1101 6 Ave., 4 story, 180,000 sq. ft. floor area, retail store, 10 acres in Hillcrest Sect., $2,000,000.

Del., Wilmington—BANK, etc.—Corpamerica, c/o Colonial Trust Co., 4 and Lincoln Sts., 6 story, basmt., brick, steel bank and office, Approx. $500,000.

Ga., Atlanta—SHOPPING CENTER, Second Realty Corp., c/o Lee Meyers, 424 Woodward Way, N.W., shopping center, $400,000.

Ga., Atlanta—APARTMENT, Seminole Court Apartments, John M. Hagley, Inc., 23 Hunter St., S.W., apartment development, $250,000.

Kan., Kansas City—DORMITORY, The Central Baptist Theological Seminary, J. R. Hales, mgr., Seminary Heights, Zone 2, plans by Neville, Sharpe & Simon, 1221 Baltimore St., 3 story, 31x161 ft. with 2 story, 63x98 ft. wings, dormitory, 39 and Armstrong Sts., $250,000. CD 6-2.

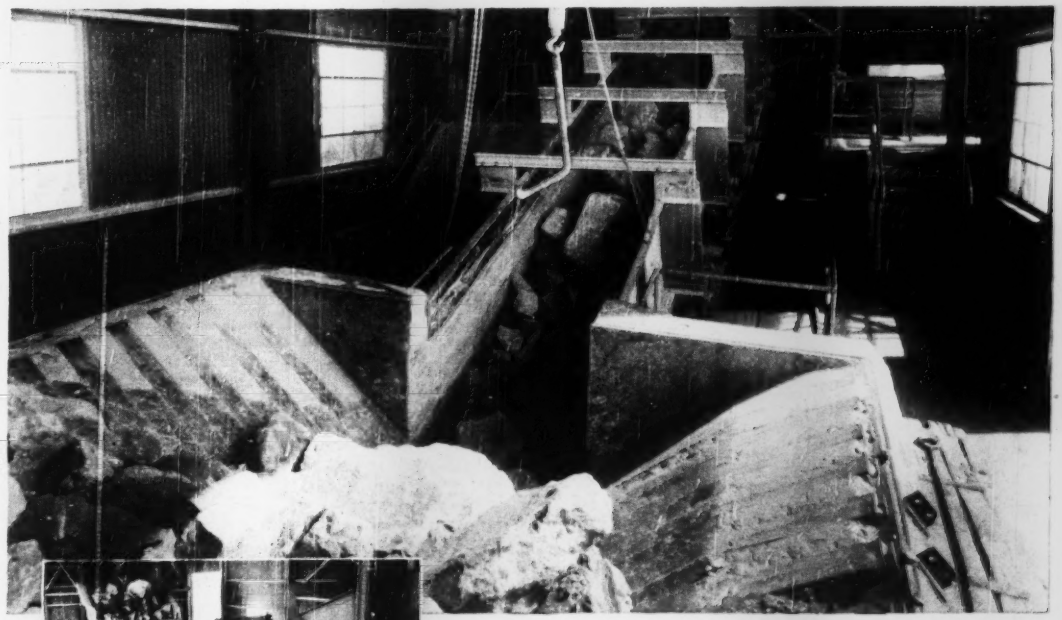
Kan., Mission—THEATRE—Dickinson Operating Co., Inc., Glen W. Dickinson, pres., Mission, plans by Robert E. Fowler, 7432 Brookyard Ave., Kansas City, Mo., 1,000 seat brick, concrete, steel Dickinson Theatre, 111 N. 9 St.

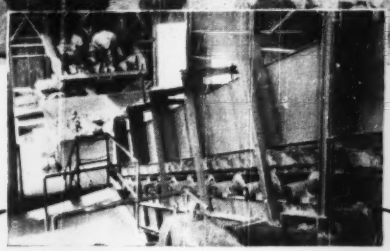
Md., Baltimore—RESIDENCES, Wm. J. DeMeara, 819 Belvedere Ave., plans by Rudolph Fisher, 5804 Hartford Rd., 2 story, basmt., 20x32 ft., brick residences, N. Rollins Rd., $680,000.

▲ O., Beachwood Village—STORE—H. A. Kangesser, 2421 Prospect Ave., Cleveland, 1 story, basmt., brick, steel store, Green Rd. and Fairmont Blvd., $1,000,000.

▲ Okla., Enid—HOSPITAL, St. Mary's Hospital, Enid, plans by M. Vitz & Reisler, 1842 E. 2 St., Wichita, Kan., hospital, $1,000,000. CD 9-15.

Pa., New Cumberland—HOUSING—New Cumberland Homes, Dist. 23-5, 4 St., Harrisburg, 24 single dwellings in west Project St., between Fourth and Fifth Sts., $350,000.





CAN YOU AFFORD A FEEDER WITHOUT THESE 6 FEATURES?

1. **SPROCKET TEETH** . . . replaceable without removing sprockets.
2. **SELF-CLEANING LINKS** . . . they won't jump.
3. **LINKS CAST INTEGRAL WITH PANS** . . . no bolts to lose.
4. **ALL WEARING PARTS** . . . pans, links, sprockets, rollers . . . of cast super-manganese steel.
5. **PANS INTERLOCKED** at four points . . . can't sag.
6. **MOUNTED** on heavy structural steel bed . . . braced and reinforced.

Lone Star Cement Installs Another Pioneer-Oro Feeder

What better recommendation for a feeder than repeat orders? Last year Lone Star Cement Corporation, one of the world's largest cement producers, installed another PIONEER-ORO Feeder. This huge feeder is 45 feet long with a clear width of 5 feet.

Money can't buy a stronger, tougher feeder! All wearing parts . . . pans, links, sprockets and rollers . . . are of cast manganese steel. The patented pans in this Lone Star installation are ¾" thick, each weighing 800 pounds. Four supporting points on each pan prevent sagging, even without rollers. PIONEER-ORO Feeders are made in widths up to six feet, and lengths to meet your requirements.

In addition to a broad line of PIONEER-ORO Feeders, Pioneer builds Traveling Grizzly, Forged Steel Apron and Heavy Duty Mechanical Feeders—in many sizes. Mail the coupon below for further feeder information.

BUY BOTH!
Higher Output, Lower Upkeep!

Pioneer

Continuflo **EQUIPMENT**

MAIL COUPON TODAY!

PIONEER ENGINEERING WORKS
1515 Central Avenue • Minneapolis 13, Minnesota

● Please send information on the equipment checked.

☐ PIONEER-ORO FEEDERS	☐ JAW CRUSHERS
☐ APRON FEEDERS	☐ ROLL CRUSHERS
☐ TRAVELING GRIZZLY FEEDERS	☐ VIBRATING SCREENS
☐ CONTINUFLO CONVEYORS	☐ WASHING PLANTS

Name_____

Company_____

Address_____

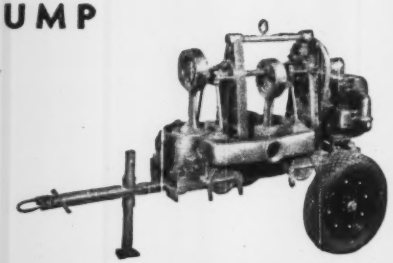
City_____ Zone____ State____

NOVO QUALITY EQUIPMENT FOR FIFTY-NINE YEARS

A NEW PUMP

- DOUBLE DIAPHRAGM
- DOUBLE CAPACITY
- DOUBLE DUTY

Handles twice the amount of muddy, or sand and debris-laden water as does Novo's well-known single diaphragm model. Write or wire for specifications on this new pump.



WRITE FOR NEW BULLETINS ON THE NOVO TO FIT YOUR NEEDS

SELF-PRIMING PUMPS
1½" to 6"
1,000 to 90,000 G.P.H.

PRESSURE PUMPS
Simplex or Duplex
200 P.S.I., 15 to 94 G.P.M.

PAVEMENT BREAKERS
3,000 lb. Drop Hammer
Mounts on 1½ Ton Truck

DIAPHRAGM PUMPS
3" or 4", Single or Double
3,000 to 10,000 G.P.H.

HOISTS
Single or Double Drum
1,000 to 6,000 lb. Line Pull

ENGINES
Air-cooled, 4 to 8 H.P.
Water-cooled, 10 to 32 H.P.

NOVO ENGINE COMPANY, LANSING, MICH.

DRILLING CONTRACTORS

DIAMOND AND SHOT CORE BORINGS—DRY SAMPLE BORINGS

Foundation Testing for Bridges, Dams and All Heavy Structures

Also

Manufacturers of Diamond and Shot Core Drills, Accessories and Equipment

SPRAGUE & HENWOOD, Inc.
Scranton, Pa. Dept. E, U. S. A.

BAILEY METERS AND CONTROLLERS

FOR SEWAGE TREATMENT AND WATER SUPPLY . . .

BAILEY METERS

- Venturi Tubes, Weirs, Flumes, Nozzles and other primary elements; Mechanically and Electrically operated Registers and Complete Automatic Control Systems.

BAILEY METER COMPANY
1029 IVANHOE ROAD • CLEVELAND, O.
Bailey Meter Co. Ltd., Montreal, Canada

VACUUM CONCRETE

Most economical to use for
PRECAST WALLS, FLOORS, ROOFS, BEAMS and COLUMNS—
IT MULTIPLIES THE SPEED

Vacuum Lined Forms can be
RE-USED AS MANY AS 8 TIMES IN ONE DAY

VACUUM HANDLING EQUIPMENT
Strips castings from molds and handles them without breakage

VACUUM CONCRETE INC. 4210 SANSOM ST. PHILA. 4, PA.

▲ Pa., Pittsburgh—HOUSING—Cloverleaf Village, Inc., 829 Industry St., Zone 10, twenty-four 1-bedroom units, ninety-six 2-bedroom units and twenty-four 3-bedroom units, 2 story garden type masonry structures, Pleasant Hills Boro. $1,319,221.

▲ Pa., Pittsburgh—HOSPITAL—St. Margaret Memorial Hospital, 265 48 St., plans by Wm. York Cocken, 800 Century Bldg., 4 story, humt., brick, stee hospital addn., 48 St. $1,000,000.

Pa., Upper Darby—OFFICE—Bell Telephone Co. of Penna., 1901 Arch St., Phila., plans by The Pepper Assocs., 225 S. 15 St., Phila., office. $400,000.

Tenn., Memphis—LIBRARY—Southwestern College, c/o Walk C. Jones Walk C. Jones, Jr., archits., 1215 Poplar St., library. $600,000.

Tenn., Nashville—OFFICE—Fred B. Moore & Assoc., 134 Peachtree St. N.W., Atlanta, Ga., remodeling office. $500,000.

Tex., Fort Worth—CHURCH etc.—Harmony Street Baptist Congregation, 1006 Stella St., plans by Consolidated Architects & Engineers, 1009 Fort Worth Natl. Bank Bldg., church and educational. $250,000.

Tex., Fort Worth—HOUSING—Mrs. Roy D. Martin, 533 Bolt St., frame housing. $250,000.

▲ Tex., Houston—HOMES—Garden City Park, Inc., c/o Albert J. Kruit, 3434 Arbor St., plans by Knostman & Webster, 2017 W. Gray St., 400 addnl. frame Negro homes, off W. Montgomery Rd. $2,500,000.

▲ Tex., Houston—HOMES, etc.—C. E. Kling & Assoc., 4110 Dennis St., plans by Robert W. Clemens & Assoc., 4110 Dennis St., 20,000 frame homes, concrete slab and slab fdn., to be known as "Kingston", $57,500,000; commercial structures proper, stores, etc., $17,500,000; community center, $500,000—on 3,000 acre tract off Humble and Mt. Houston Rds., near here. Robert M. & Robert W. Atkinson, 1st. Natl. Bank Bldg., engrs.

Tex., Houston—SHOPPING CENTER—J. E. Zeicher, 2204 Arbor St., plans by L. Gabert & W. J. Wisdom, 1315 Bell St., 66x1,110 ft. masonry shopping center, off Holmes and Old Spanish Trail Rds. $750,000.

Tex., Houston—DUPLEXES—Herman Zondra, 9 Orr Rd., plans by Joseph D. Kiskower, 3413 Stanford St., addnl. 2 story wood frame duplexes. $250,000.

Tex., San Antonio—DWELLINGS—Paul L. Knolk, 2554 W. Woodlawn St., 47 addnl. masonry frame dwellings, concrete slab fdn., Monticello Addn. $350,000.

Tex., San Antonio—DWELLINGS—Arthur J. Puig & Co., 517 W. Hildebrand St., 40 frame dwellings, Dell Brook, etc. $300,000.

Tex., San Antonio—RESIDENCES—Quin-Cut Co., c/o L. R. Pletz, 1426 N. Brazos St., 100 addnl. frame residences for Negroes, concrete slab fdn. $550,000.

Tex., Wichita Falls—HOTEL—Watchman Hotel, Wichita Falls, plans by Tornek-Hebrew, 905 Bluff St., 7 story, masonry hotel addn. $475,000. CD-6/26.

▲ Wash., Spokane—HOUSES—Development Co., Hyd Bldg., 125 houses in area south of Manito Golf Course. $2,500,000.

Wash., Yakima—HOUSES—Westland Constr. Co., 1105 Westlake Ave. N., 50 houses. $500,000.

INDUSTRIAL BUILDINGS

Ill., Chicago—FACTORY—Rainland Corp., 4245 N. Knox St., plans by Victor Chann, 4744 W. Rice St., Zone 51, 35,000 sq. ft. steel, concrete, brick factory addn. $185,000.

▲ Neb., Lincoln—PLANT—Goodyear Tire & Rubber Co., 1144 S. Market St., Akron O., industrial plant. $1,000,000.

N. J., Trenton—TRUCKING TERMINAL—A. A. A. Trucking Corp., 551 New York Ave., plans by W. Melby Newmark, 200 Pingree St., trucking terminal. Approx. $150,000.

† N. Y., Buffalo—COKE OVENS—Donner—Hanna Coke Corp., Ash and Myrtle Sts., 36 retort coke ovens to supplement 216 now operated at its Buffalo plant. $1,000,000.

O., Toronto—POWER PLANT—Hydro Electric Co., 47 N. Main St., Ajax, addn. to power plant to eliminate soot and smoke. $800,000.

Pa., Phila.—GARAGE, etc.—Police Missing Find Society, 12 S. 12 St., plans by Burton Mahler & Wehrle, 2 sty., 17 St., 70x114 ft., brick, block garage and offices. $125,000.

Pa., West Mifflin—PLANT—Shawnee Bros., Inc., 42 High Level Dr., Detroit, Mich., 1 story, 200x1250 ft., brick, block, steel mfg. plant, near Airport. $500,000. McKinney Co., Liberty and Denny Sts., Pittsburgh, constr. engr.

▲ Tex., Snyder—PLANT—Sunray Oil Co., Phillips Bldg., Tulsa, Okla., gas conservation plant (capacity extraction of 490,000 gal. liquefied petroleum from 51 M cu. ft. of natural gas per 24 hour day). $1,250,000.

Wash., Vancouver—GARAGE—McCoy Auto Co., Main and 13 sts., 1 story, 96x140 ft. and 50x175 ft. garage. $300,000.

Ont., St. Catherines—GARAGE—Provincial-Wentworth Transport, 235 Queens Quay, Toronto, garage. $100,000.

Ont., Tillsonburg—PLANT—St. Regis Paper Co., Dryden, Ontario, to mfg. plant. $150,000.

UNCLASSIFIED

Ga., Brunswick—MOTOR COURT—Peoples Mortgage Co., Inc., Brunswick, motor court, $200,000.

Illinois—RURAL DISTRIBUTION LINES—M. J. M. Electric Co-operative, Inc., W. H. Monke, pres., Carlinville, 151 mi. rural distr. lines, Fayette, Jersey, Macoupin, Madison and Montgomery Counties, $685,000. CD 3/29/49.

Ill., Canton—DRIVE-IN THEATRE—Kerasotes Theatres, George Kerasotes, pres., 300 Kerasotes Bldg., Springfield, 600 car drive-in theatre, etc., north of near here on Route 78. $100,000.

▲ Kentucky—GAS MAINS—Central Kentucky Natural Gas Co., Charleston W. Va., 40 mi. 20 in. loop gas lines, North Means to Foster, incl. 850 hp. gas engine driven compressor unit, North Means, $2,726,000. CD 6/16/47.

Louisiana—OIL LINES—Pelican Oil Co., Lake Charles, est. 6 to 8 in. crude oil lines, Lake Charles area, $600,000.

▲ Louisiana, Mississippi, Alabama, Georgia, South Carolina and North Carolina—GAS PIPELINES—Plantation Pipeline Co., c/o Muscowitz, Wilmer & Mulkey, engrs., 1000 Peachtree St., N.E., Atlanta, Ga., gas pipelines from Baton Rouge La. to Charlotte, N. C. $50,000,000.

Missouri — RURAL DISTRIBUTION LINES — Ozark Border Electric Co-operative, P. G. Winge, pres., Fifth and Poplar Sts., Poplar Bluff, 350 mi. rural distr. lines, 25.3 mi. tie lines and sys. improvs. in Stoddard, Cape Girardeau, Dunklin, Bollinger, Scott, Mississippi and New Madrid Counties. $740,000

O., Jefferson—GRANDSTAND—Comrs. Ashtabula Co., Courthouse, election Nov. 7 to vote on half-mill, two year levy for grandstand, livestock barn and other improvs. at county fairgrounds. CD 7/31.

Okla., Muskogee—PARKS, etc.—City bond election Aug. 15 parks and playgrounds, $115,000. Benham Eng. Co., American Natl. Bldg., Oklahoma City, consult. engr.

▲ Texas and Louisiana—GAS LINES, etc.—Valley Gas Pipe Line Co., Inc., 4604 Main St., Houston, Tex., and R. D. Curtis, D. Dail, Alamo Natl. Bank Bldg., San Antonio, Tex., plans by H. K. Ferguson Co., M. & M. Bldg., Houston, Tex., additional compressor stations and feeder lines at Goliad, $33,500,000; 1,278 mi., 24 and 30 in. natural gas pipe line, 24 in. line between Goliad and Saratoga (near Houston), Tex., then 30 in. line will run to Arcadia, La., El Dorado, Ark., Jonesboro, Ark., Cape Girardeau, Mo., Lawrenceville, Ill., Terra Haute, Ind., and terminate in southern Michigan near Detroit, $144,500,000; approx. 162 Mi. 24 in. gas line, originating in Vermilion Bay, La., below Abbeville, paralleling the Gulf of Mexico (under water) and brought ashore in Texas near Sabine Pass, incl. booster stations, $9,820,000. R. G. Schneider, c/o owner, engr. CD 6/30.

▲ Texas, Arizona, New Mexico, California—GAS LINE—El Paso Natural Gas Co., Bassett Tower, El Paso, Tex., 451 mi. natural-gas line between vicinity of Farmington, New Mexico to vicinity of Topock, Ariz., and points in Arizona, through Texas, Arizona, to near Needles on Calif.-Ariz. border line, $44,500,000.

Texas—RURAL DISTRIBUTION LINES—Kimble Electric Co-operative, Junction, 135 mi. rural distr. lines and sys. impros., Kimble Co. $215,000.

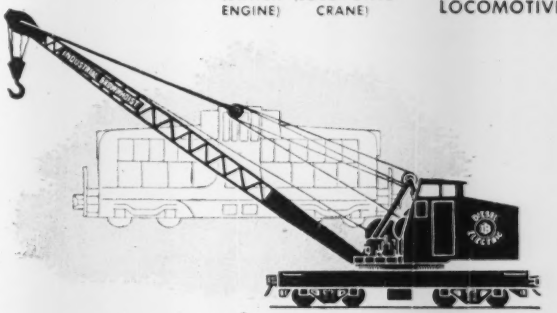
▲ Tex., Beaumont—RAILWAY—City bond election Aug. 12, relocation SP Railway mid-town yards to an outlying dist., $500,000; combining M. R. Ry. and SP Ry. tracks in Central Beaumont on an elevated track overpassing entire town, $750,000; relocation and new KCS railway tracks and yards and removing all tracks from Railroad Ave., $500,000. R. C. Black, city engr. CD 4/16/48.

Labrador—RAILROAD—Hollinger-Hanna Ltd., Leader Bldg., Cleveland, 360 mi. railroad from Seven Islands to Knob Lake, F. H. McGraw & Co., 51 E. 42 St., New York, N. Y., Stone & Webster Eng. Corp., 49 Federal St., Boston, Mass., Sanderson & Porter, 52 William St., New York, N. Y., Coverdale & Colpitts, 120 Wall St., New York, N. Y., consult. engrs.

NEW ARITHMETIC FOR COST MINDED EXECUTIVES:

1+1=1 BROWNHOIST

(SWITCH ENGINE) (LOCOMOTIVE CRANE) DIESEL ELECTRIC LOCOMOTIVE-CRANE



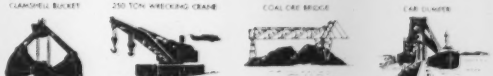
Two big pieces of material handling equipment in one — that's what you get in the Brownhoist Diesel Electric Locomotive-Crane — a heavy-duty switch engine, and a powerful locomotive crane of 30 tons capacity, and up.

New clear-vision boom design allows operator an unobstructed view through the lower end of the boom, an area that is a blind spot on many cranes.

And the Monitor-type cab assures 360° visibility from the operator's position. Safety engineered design gives 14" clearance between revolving upper work and car body.

Write today for more complete information.

BROWNHOIST BUILDS BETTER CRANES



INDUSTRIAL BROWNHOIST CORPORATION • BAY CITY, MICHIGAN

DISTRICT OFFICES: New York, Philadelphia, Cleveland, San Francisco, Chicago. AGENCIES: Detroit, Birmingham, Houston, Los Angeles, Portland, Seattle, Spokane, Canadian Brownhoist Ltd., Montreal, Quebec.

The BELMONT IRON WORKS

Engineers — Fabricators — Erectors
Contractors — Exporters
Cable address—Beliron

STRUCTURAL STEEL
BUILDINGS & BRIDGES
RIVETED — ARC WELDED
Shops — Eddystone

PHILADELPHIA
Main Office
Philadelphia
48, Pa.

ROYERSFORD
New York Office
44 Whitehall St.,
N. Y. 4, N. Y.

"GUNITE"
NEW CONSTRUCTION AND REPAIRS

- Prestressed Tanks
- Repair all Types Disintegrated Concrete
- Dam Reconstruction and Repairs
- Linings and Repairs to Reservoirs, Stacks, Bunkers, Sewers, Tanks, Tunnels, Pen Stocks
- Structural Steel Encasements
- Restoration of Masonry Structures

Experienced Personnel
Write for our new 48 page Bulletin
PRESSURE CONCRETE CO.
Gunite Contractors and Engineers
193 Emmett Street So. Court Street
Newark 5, New Jersey Florence, Alabama
33 N. LaSalle St., Chicago 2, Ill.
Liberty Life Bldg., Charlotte, North Carolina

DRILLING
ANYWHERE

We look into the earth

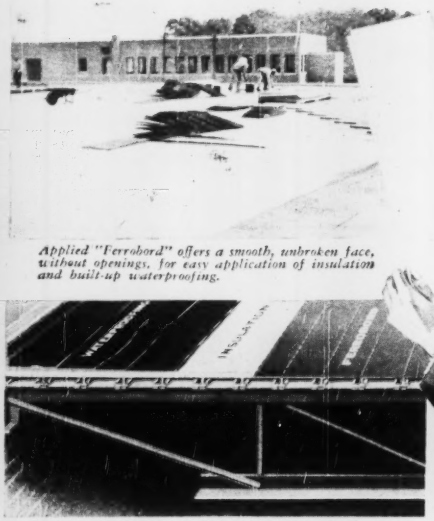
PENNSYLVANIA
DRILLING COMPANY
PITTSBURGH, PA.

TRUSCON
MARK OF MERIT PRODUCTS

TRUSCON Ferrobord STEELDECK ROOF

these 2 square feet

"Ferrobord" can be welded directly to steel units such as Truscon "Clerespan" Joists.



Applied "Ferrobord" offers a smooth, unbroken face, without openings, for easy application of insulation and built-up waterproofing.

For the reduction of heat transmission and elimination of condensation, "Ferrobord" can be insulated to any required depth.

"Ferrobord" units are 6 inches wide by 1½ or 1¾ inches deep.

prove some mighty big points

It takes so little to prove so much with Truscon "Ferrobord" Steeldeck. With two square feet of sample and about twenty minutes of your time, an experienced Truscon man can demonstrate its many profitable advantages. The light weight but extreme strength of this material will be highly interesting to you, especially from the structural standpoint. "Ferrobord" members are so designed and formed that they firmly interlock with each other along their entire length. This achieves the maximum in lateral distribution of concentrated loadings. The quick, easy installation; the built-up roofing and insulation possibilities; the adaptability to flat, pitched or curved roofs; and other "Ferrobord" features are additional advantages you should investigate. Write for free illustrated literature and ask for a Truscon "Ferrobord" Steeldeck demonstration.

FREE Book on Truscon "Ferrobord" Steeldeck Roofing. The Truscon Steel Company Manufactures a Complete Line of Steel Windows and Mechanical Operators . . . Steel Joists . . . Steeldeck Roofs . . . Reinforcing Steel . . . Industrial and Hangar Steel Doors . . . Complete Hangars for Small Planes.

TRUSCON STEEL COMPANY
Subsidiary of Republic Steel Corporation
YOUNGSTOWN 1, OHIO
Warehouses and sales offices in principal cities

CONSTRUCTION REPORTS-Second Section

WATER SUPPLY

BIDS ASKED

Minn., Bejou—B. A. 8/7—Village, A. Bjerga, clk., NW. 8Sky, dists. mains, 6,000 gal. steel water tank, $30,000. Plans deposit $10. Hitchcock & Estabrook, 521 Sexton Bldg., Minneapolis, engrs. CD 1/3.

Tex., Earth—B. A. 8/9—City, Earth, WW, $60,000. Plans deposit $25. Price & Hawk, 1641 Broadway, Lubbock, engrs.

O., Dayton—B. A. 8/8—Montgomery County Comrs., Courthouse, 10-in. water main on Dorothy Lane U.S. 25 to Springboro Pike, Carrollmoite Water Lines, Sect. 2; water main Moraine Stampipe to David Road. Plans deposit $5. Earl Riber, c/o owner, county sanitary engr.

Kan., Stockton—B. A. 8/16—Edith L. Lee, city clk., Stockton, contr., WW extens., incl. 18,150 lin. ft. 2 to 8 in. cl. pipeline, 6 ton c-i-c kilns, etc. Plans deposit $5, $2.50 refundable. Wilson & Co., 223 N. Santa Fe St., Salina, engrs.

Pa., Norristown—B. A. 8/16—General State Auth., 18 and Keer Sts., Harrisburg, general contr. heating; plumbing; electrical for construction of water sections at Norristown State Hospital, $340,000. Plans deposit $10, each. Edwyn G. Rorke, North Whitehall Rd., archt., A. F. Jones, c/o owner, ch. engr.

SEWERS, WASTE DISPOSAL

BIDS ASKED

O., Dayton—B. A. 8/8—Montgomery County Comrs., Courthouse, install 48 and 60 in. storm sewer and junction box at intersection of Stroop Rd. and Fox Hills Ave. and relocation of approx. 1,000 lf. 24 in. storm sewer, building of manholes on Moreland Creek, Van Buren Twp., Job No. 49-222. Carl Bauer, 101 N. Moss Ave., county engr.

Kan., Stockton—B. A. 8/16—Edith L. Lee, city clk., Stockton, contr., sanitary sewer extens., incl. 19,630 lin. ft. 8 in. v.c. pipeline, 51 manholes, 3,180 cu. yd. rock excav., etc. Plans deposit $5, $2.50 refundable. Wilson & Co., 223 N. Santa Fe, Salina, engrs.

▲ Minn., Rochester—B. A. 8/14—City, F. B. Finch, clk., sewage treatment plant and sanitary trunk line sewer, $3,460,000. Toltz King & Day, 1509 Pioneer Bldg., St. Paul, engrs. CD 7/12.

N. Y., Brooklyn—B. A. 8/22—Dpt. Pub. Wks., Municipal Bldg., New York, Zone 7, construct sludge vessel for Contr. 13, Sect. 5, Owl's Head Sewage Treatment Works. Plans deposit $25.

LOW BIDDERS

▲ Pa., Bethlehem—Bethlehem Auth., 528 N. New St., July 14, sewage disposal plant and trunk line sewers from Thomas Edison Corp., 11 N. Pearl St., Albany, N. Y., $2,424,242. Lovelace & Spilman, 103 W. Broad St., archts. R. L. Fox Weston, c/o owner, Exec. Dir. and ch. engr. CD 6/2.

BRIDGES

BIDS ASKED

August 11
Alabama
Kansas
Kentucky
August 15
Texas

August 16
California
August 23
New York
August 17
California

CONTRACTS AWARDED

▲ New Jersey—New Jersey Turnpike Auth., Trenton, Contr. 8, Sect. 1, steel concrete bridge structures, concrete street paving and incidental work in connection with contr., Sec. 2, Woodbury, Hughes-Hartford, Gloucester, Camden and Burlington Counties, to Francis A. Comuso & Son, 804 S. 12 St., Philadelphia, $1,470,113. Bids 7/18, awarded 7/27. CD 7/20, under LB.

STREETS AND ROADS

BIDS ASKED

August 8
Maryland
Massachusetts
Ohio
South Dakota
Washington
Wisconsin
August 10
Nebraska

August 11
Alabama
Kansas
Kentucky
August 15
Texas
August 16
California
Texas

August 23
Louisiana

EARTHWORK, WATERWAYS

BIDS ASKED

† Oregon—B. A. 8/2—U. S. Eng., 628 Pittock Block, Portland, Zone 5, channel improv. along the right bank of the Willamette River at the Corvallis City Water Intake location, approx. 2 mi. southeast of Corvallis, Benton Co. Serial No. CIVENG 49-026-51-21.

LOW BIDDERS

Louisiana—Dpt. P. Wks., State Capitol, Baton Rouge, July 19, earth dam for Dept. Wild Life and Fisheries, etc., Rapides Parish, from Dutz Equip. & Constr. Co., etc., Rapides Parish, from Dutz Equip. & Constr. Co., etc. Rapides Parish, from Dutz Equip. & Constr. Co., etc. Rapides Parish, from Dutz Equip. & Constr. Co., etc.

FOUNDATIONS

PRETEST UNDERPINNING
CONCRETE-STEEL PILES
MASS CONCRETE CONSTRUCTION
HEAVY SHORING
DRILLED-IN CAISSONS

Send for catalogs descriptive of the latest foundation types and methods

SPENCER, WHITE & PRENTIS, INC.
10 EAST 40th ST. NEW YORK 16, N. Y.
602 HAMMOND BLDG. DETROIT 26, MICH.

MOTT Diamond Core Drilling Contractors

FOUNDATION TESTING
for
Bridges, Dams, Heavy Structures
PRESSURE GROUTING

MFR'S DIAMOND & SHOT CORE DRILLS, GROUT MIXING MACHINES, PACKERS AND GROUT PUMPS

MOTT CORE DRILLING CO.
HUNTINGTON, W. VA.

EPPINGER AND RUSSELL CO.
Wood Preservers Since 1878
80 Eighth Ave., New York 11, N. Y.
PRESSURE TREATED
TIES—POLES—PILING—LUMBER
WITH
Creosote or
Chromated Zinc Chloride
TREATING PLANTS
Jacksonville, Fla. Norfolk, Va.
Eddington, Pa.

Stang WELLPOINT SYSTEM

For KNOW-HOW • ENGINEERING • SUPERVISION • EQUIPMENT to keep jobs DRY

The Stang System has proved its efficiency and economy on both large and small jobs all over the United States. Stang engineering and supervision in planning, installation and operation insures a DRY JOB at all times.

JOHN W. STANG CORPORATION
2 Broadway, New York 4, N. Y.
2123 S. 56th St., Omaha, Nebr.
8221 Atlantic Ave., P.O. Box 631, Bell, Cal.

LOW BIDDERS

Calif., Fresno—POULTRY and ANIMAL DIAGNOSTIC LABORATORY—State Div. Architecture, P. Wks. Bldg., Sacramento; July 18, general contract, 2 story wood frame with concrete floor poultry and animal diagnostic laboratory for Dept. Agriculture, from Larsen-Ratto Constr. Co., 1401 Hedges Ave. $232,767. CD 4/28.

Calif., Los Angeles—SCHOOL—City Bd. Educ., 2425 S. San Pedro St., Castle Heights School, from Harry Hansberg, 14212 W. Jefferson St., Los Angeles; $392,907, est. $345,000.

▲ Md., Baltimore—HOSPITAL—State of Md., Dist. P. Imprvs., 300 Park Ave., Zone 1, July 20, brick, steel, concrete university hospital Psychiatric Unit addn., Redwood St., from Jos. F. Nuttle & Co., 511 N. Charles St., Zone 2, $2,521,679. CD 6/23.

Minn., Crystal Bay—SCHOOL—Bd. Educ., Winifred Bryant, Clk., July 18, 1 and 2 story, brick, Jensen Hill School, from Standard Constr. Co., 250 Bldrs. Exch. Bldg., Minneapolis, $578,948. CD 7/13.

Minn., Little Falls—SCHOOL—Bd. Educ., C. J. Olsen, clk., July 13, 2 story, 320x155 ft. grade school, from Peterson Constr. Co., 420 National Bldg., Minneapolis, $483,000. CD 6/18/47.

N. Y., Brooklyn—HOUSING—New York City Housing Auth., 63 Park Row, New York, Zone 7, July 24, foundations and appurtenances for Brukenen Houses Proj. No. NY 5-11? in area bounded by E. 103 St., Glenwood Rd., E. 108 St., Farragut Rd., E. 108 St., Stanley Ave., Louisiana Ave., and Flatlands Ave., from Hunt Constr. Co., Inc., 1776 Broadway, New York, $2,268,628. CD 7/20.

CONTRACTS AWARDED

▲ Md., Mt. Wilson—HOSPITAL—State, Dist. P. Imprvs., 300 Park Ave., Zone 1, 8 story, steel frame, general masonry, 303 bed Mt. Wilson State Hospital, to Cramer-Vollmerhausen, 2601 Conn. Ave. N.W., Washington, D. C., $3,018,000. Awarded 7/20. CD 7/12 under LB.

▲ N. J., Paterson—HOUSING—Paterson Housing Auth., 29 Harris St., low rent housing project consisting of 38 townhouses, 27 acre, Almshouse Site to Terminal Constr. Co., 194 Hackensack St., West Ridge, $2,965,000. Bids 7/11. CD 7/17, under LB.

N. Y., Brooklyn—SCHOOL—Supt. School Bldgs., Design & Constr., 49 Flatbush Ave. exten., Zone 1, general constr. P. S. 251, Avenue U and E. 64 to E. 66 Sts., to T. G. F. Constr. Co., Inc., 55 W. 42 St., New York, Zone 18, $878,500. Bids 7/13. CD 7/17, under LB.

▲ N. Y., New York—HOUSING—New York City Housing Auth., 63 Park Row, Zone 7, general contract and equipment, Nicholas Houses (Proj. NY 5-10?) Sec. 1, incl. Bldgs. 1, 2 and 4 in area bounded by 2nd Ave., E. 126 St., 3 Ave. and W. 129 St., to H&H Constr. Co., 9 E. 40 St., Zone 17, $2,745,990. Bids 7/11. CD 7/13, under LB.

▲ N. Y., New York—SCHOOL—Supt. School Bldgs., Design & Constr., 49 Flatbush Ave. exten., Brooklyn, Zone 1, general contract P. S. 192, Hamilton Pl., Amsterdam Ave., W. 136 and W. 138 Sts. to Caristo Constr. Co., 26 Court St., Brooklyn, Zone 2, $2,222,000. Bids 7/6. CD 7/17, under LB.

▲ Pa., Scranton—HOUSING—Scranton Housing Auth., City Hall, and Home Finance Agency or Public Housing Auth., 1701 N. Broad St., Phila., 240 dwelling units in 20 bldgs., Ward 10, to John A. Gallagher & Sons, Inc., 237 41 St., Brooklyn, N. Y., $2,523,000. Bids 7/7. CD 7/21, under LB.

▲† Tenn., Oak Ridge—ISOTOPE RESEARCH—U. S. Atomic Energy Comm., P.O. Box E, isotope research and semi-works, Bldg. No. 2 at Oak Ridge National Laboratory, K-10 area, Roane Co., Inv. No. 451-50-270, to J. W. Bateson Co., Inc., Trans-Continental Bldg., Dallas, Tex., $2,477,048. Bids 7/19. CD 6/21.

COMMERCIAL BUILDINGS

BIDS ASKED

▲ N. Y., Hastings-on-Hudson—HOME—B.A. 6/8—Julia Dyckman Andrus Memorial, Inc., 2156 N. Broadway, Yonkers, Home for Aged, $2,500,000. Leonard Schultze & Assoc., 119 E. 40 St., New York, Zone 17, archts. CD 6/8.

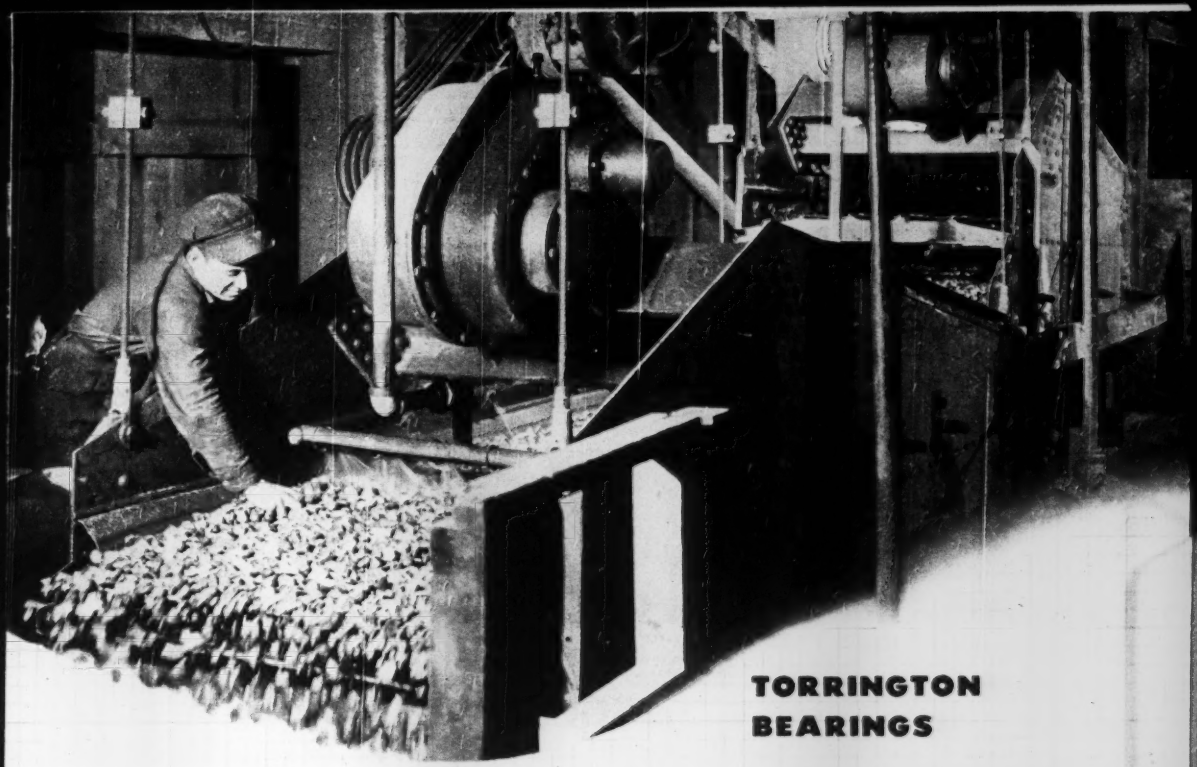
▲ Pa., Pittsburgh—NURSES' HOME, SCHOOL—B.A. 7/8—University of Pittsburgh, Forbes Sts., nurses' home and training school, Listhrop St., $4,200,000. Ingham, Boyd & Pratt, Empire Bldg., 307 Liberty Ave., archts. CD 10/20/49, under LB.

▲Tex., Dallas—HOTEL—B.A. 8/15—Hotel Adolphus, c/o Lee F. Corrigan, Mercantile Bank Bldg., 24 story hotel addn., $5,500,000. Wyatt C. Hedrick, 904 Fort Worth Ave., archt. CD 7/7.

▲ Ill., Chicago—APARTMENTS—Bids Asked—Parkway Garden Homes, S. Parkway and Calumet, forty-five 6-flat unit brick tenement apartments, $3,500,000. Holsman, Holsman, Klekamp & Taylor, 39 S. State St., Zone 3, archts.

CONTRACTS AWARDED

▲ Calif., Los Angeles—DWELLINGS—Coronet Constr. Co., 5733 Lauderdale Blvd., 226 stucco dwellings on Woodman, Buffalo, Ventura Canyon Allot. Aves., Margate, Westington Sts., and Magnolia Blvd., owner builds, $2,015,330. L. H. Fickett, 3657 Wilshire Blvd., Los Angeles, archt.



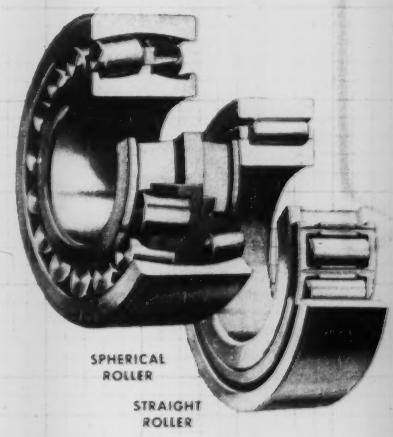
TORRINGTON BEARINGS

pass a tough screen test

Vibrating screens give a design engineer a tough problem in bearing selection. Satisfied with nothing less than the best screen performance, Allis-Chalmers engineers have devoted years of research in close cooperation with bearing manufacturers to develop precision bearings ideally suited to each specific screen application.

For example, in many Allis-Chalmers Ripl-Flo screens, two Torrington Spherical Roller Bearings are used to support the accurately-balanced eccentric shaft that imparts a perfect circle vibratory motion. Many Allis-Chalmers Low-Head screens utilize four Torrington Straight Roller Bearings to support the counterweighted shafts providing the straight-line vibratory motion. The results are high performance and low maintenance in both models.

It may pay you, too, to consult our engineers' special knowledge of all major bearing types in connection with *your* friction problems.



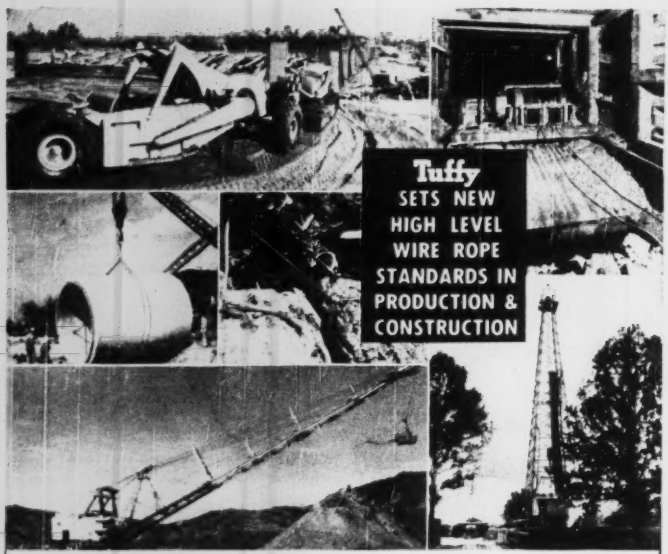
THE TORRINGTON COMPANY

South Bend 21, Ind. • Torrington, Conn.

* District Offices and Distributors in Principal Cities of United States and Canada

TORRINGTON BEARINGS

SPHERICAL ROLLER • TAPERED ROLLER • STRAIGHT ROLLER • NEEDLE • BALL • NEEDLE ROLLERS



TUFFY SIMPLIFIES ORDERING, INSTALLING AND STOCKING

The Tuffy family is designed for special purpose jobs—the toughest jobs any wire rope can be called upon to do. Not only are Tuffy special purpose ropes setting new high standards in production and construction service—they also simplify ordering, installing and stocking. Just the trademark name Tuffy, the size and length will bring you the ultimate low cost rope for these special purposes.

Tuffy SCRAPER ROPE
Test Tuffy's ability to handle extra yardage on the toughest scraper jobs. You'll change to Tuffy on your whole fleet!

Tuffy MINING ROPE
Union-formed for mining machine operations. Stronger, safer, withstand abrasion and crushing longer. Easy to handle—flexibility is built in!

Tuffy ROTARY LINE
Designed for jackknife and standard rotary rigs, Tuffy Rotary lines are the choice in all well drilling operations for ultimate drilling economy.

Tuffy DRAGLINES
Put Tuffy Draglines to any test. Watch them come out on top with unequalled money-saving records. To order—just specify length, diameter and "Tuffy"!

Tuffy SLINGS
An entirely different, patented, interlaced wire fabric construction gives Tuffy Slings extraordinary stamina and flexibility. Factory fitted.

Tuffy CHOKER
Wire rope specially stranded and socketed for extra strength, stamina, flexibility required in logging.

union Wire Rope corporation

Send information on: 2228 **Manchester Ave., Kansas City 3, Mo.**

Tuffy ☐ SCRAPER ROPE ☐ DRAGLINES ☐ SLINGS ☐ MINING ROPE ☐ CHOKERS ☐ ROTARY LINE

FIRM NAME

ADDRESS

CITY ZONE STATE

"GUNITE" CONCRETE
(Since 1915)

FOR • STEEL PLATE LINING • STEEL ENCASEMENT • BUILDING NEW WALLS • LINING WATER RESERVOIRS, TUNNELS AND SEWERS • PLATE LINING OF STEEL STACKS, BUNKERS, DUCTS • REPAIR OF DISINTEGRATED CONCRETE AND MASONRY • CANAL, DITCH AND DRAIN LINING

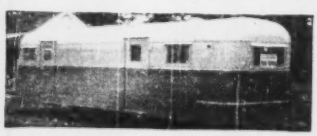
GUNITE CONCRETE & CONST. CO.
1301 Woodswether Rd., Kansas City 6, Mo.

District Branch Offices

R. N. Turner, Dist. Mgr., 228 No. LaSalle St., Chicago 1, Ill.; B. H. Mueller, Dist. Mgr., 6625 Delmar Blvd., University City, (St. Louis), Mo.; Philip D. Barnard, Dist. Mgr. 2036 Addison, Houston 5, Tex.

Branch Offices: Denver, Dallas, New Orleans

See our catalog in Sweet's



CONTRACTORS' FIELD OFFICE TRAILER

Designed by Road Contractor

26' Aluminum Body—8' Wide
2 Rooms—2 Built-in Desks
1 Drafting Table—Built-in
Letter Files—Cabinets—
Closets—Drawers—etc.

Price $2600.00 f.o.b. Baltimore

TRAILER VILLAGE, INC.
8645 Pulaski Highway, Baltimore 21, Md.
Phone: Essex 2233

Calif., Pico—DWELLINGS—Valentia Park Builders, 445 N. La Cienega Blvd., Los Angeles, 136 stucco dwellings on Arma St., Bridgeview, Les Terres and Maxis Aves., Owner builds. $790,480. Frank Green, 1515 E. Chevy Chase St., Glendale, archt.

Calif., Sacramento—BANK ADDN.—Anglo California National Bank, 1 Sansome St., San Francisco, 2 story, rein.-con. steel bank addn., to Campbell Constr. Co., 800 R. St., Sacramento. $556,169. Bids 6/28. CD 7/6, under LB.

Ill., Chicago—STORE and LOFT—American National Bank & Trust #7814, 33 N. LaSalle St., Zone 2, 8 story, rein.-con., stone, granite store and loft at Rush St. and Ontario St., to Paul H. Schwandener, 7553 S. Chicago Ave., Zone 17, $700,000. Awarded 7/14. CD 4/28.

▲ Minn., Minneapolis—APARTMENT—Park Terrace Apts., c/o contractor, 11 story, 60x23e ft. apartment, to Alexander & Kingsley, 4641 Hiawatha Ave., $1,750,000. CD 5/24.

▲ N. J., West Point Pleasant—HOUSING—Samuel W. Wilverman, c/o Samuel Paul, archt., 163-18 Jamaica Ave., Jamaica, N. Y., 1200 ranch-style houses incl. recreation facilities on 800-acre tract in Brick Twp., Owner builds. Est. $8,000,000.

▲ N. Y., New York—APARTMENT—River Esplanade Corp., c/o Norman K. Winston, 228 W. 48 St., 15 story tower apartment, East End Ave. and E. 82 St., Own forces. $1,879,339. Emery Roth & Sons, 18 E. 48 St., archts.

▲ N. Y., New York—OFFICE—J. D. Weiler and Ben Swig, 50 E. 42 St., 15 story 102x113 ft. office, 1460 Broadway at 41 St. to MacArthur Constr. Co., 101 Park Ave. Approx. $2,165,836. Emery Roth & Sons, 18 E. 48 St., archts.

▲ Pa., Harrisburg—HOSPITAL—Harrisburg Hospital, Front and Mulberry Sts., new bldg. and hospital addns. and alterations, S. Front St. to Ritter Bros., 1511 N. Cameron St., $2,358,032. Est. $3,500,000. Bids 6/22. CD 6/28, under LB.

▲ Tenn., Nashville—FIELD HOUSE, GYMNASIUM—Vanderbilt University, Nashville, field house and gymnasium to Foster & Creighton Co., American Natl. Bank Bldg., $1,277,400, est. $1,500,000. Bids 6/1. CD 6/12, under LB.

▲ Tex., Houston—DWELLINGS—Fairworth Co., c/o M. McCullion, 932 North Blvd., 250 dwellings. Owner builds. $2,350,000. CD 2/15.

Tex., Houston—SHOPPING CENTER—Vernon Frost, N. Esperson Bldg., shopping center. Owner builds. $260,000. CD 4/28.

▲ Tex., Houston—OFFICE—Melrose Building, San Jacinto and Walker Sts., 21 story office to Telfesson Constr. Co., 1710 Telephone Rd. Approx. $3,750,000. Lloyd & Morgan, 4605 Montrose Blvd., archts. Walter P. Moore, 4605 Montrose Blvd. and Herman Brown, 2812 Fairmount St., Dallas, engrs.

INDUSTRIAL BUILDINGS

BIDS ASKED

▲ Neb., Lincoln—PLANT—Bids Asked—Goodyear Tire & Rubber Co., 1144 E. Market St., Akron, O., plant addn., $1,000,000. CD 7/26.

Tex., Missouri City—STORAGE PLANT—Bids Asked—National Archives Comm., c/o Robert H. Martin, Federal Standard Bldg., Dallas, records storage plant, $750,000. CD 7/21.

CONTRACTS AWARDED

Ala., Montgomery—PLANT EXPANSION—Montgomery Structural Steel Co., 1 Structural Steel & Aluminum Bldg., Washington St., planning plant expansion, to Andrew B. Dunbar, Exec. Office, Atlanta, Ga. $500,000. CD 5/30.

▲ Colo., Grand Junction—PLANT ADDN.—Public Service Co., 16 and Glenarm Sts., Denver, steam plant addn., to Morrison-Knudsen Co., 1716 California St., Denver. $1,500,000.

▲ Ga., Thomson—MILL—Penn-Dixie Cement Corp., c/o Engineering Department, Nazareth, Pa., cement mill, to Constr. Co., 219 N. Main St., Greenville, S. C. Approx. $1,000,000. CD 7/11.

▲ Ky., Brandenberg—PLANT—Mathieson Chemical Corp., Wehrle Bldg., Baltimore, Md., design and construct plant for conversion of electrolytic caustic products, to Stone & Webster Engineering Corp., New York, N. Y. Total cost $13,000,000. CD 4/28.

▲ O., Cleveland—MOTOR ASSEMBLY PLANT—Thompson Products, Inc., 23555 Euclid Ave., Cleveland, Mfr. of automotive parts and electronic products, to H. K. Ferguson Co., 1700 E. 13 St., Cleve., $10,000,000. Bids 7/10. CD 4/28.

▲ Tex., Baytown—PLANT—E. M. Hoose Corp., Bonger Bldg., Houston, plant addn. to Stramberger, Mfr. Co., 1st Natl. Bank Bldg., Houston. Approx. $1,500,000. CD 7/20.

▲ Ont., Ottawa—STEEL FRP WAREHOUSE—General Motors, 151 Parkdale Ave., Ottawa, plant for 126,000 sq. ft. vertical panel type warehouse to Dominion Bridge Co., Ltd., 1415 Lasalle Blvd., Montreal, Que. Total est. $3,000,000. CD 4/13.

▲ Ont., Windsor—PLANT FOUNDATIONS—Hydro-Electric Power Comm. of Ontario, 620 University Ave., Toronto, for 4 story 300,000 sq. ft. steel, concrete and brick cereal products plant to Thompson-McIntyre, Ltd., Windsor, Ont. Total est. $1,500,000. CD 4/13-47.

UNCLASSIFIED

BIDS ASKED

Oregon—SWITCHING STATION, etc.—B.A. 8/7—Bonneville Power Admin., 827 N.E. Oregon St., Portland, construct McKinley switching station and Norway substation, 1 kv, 52c4, Cross Co. Plans deposit $25.

Miss., Monticello—DAM—B.A. 8/8—State Game & Fish Comm., State Capitol, Earth Dam, grading, conc. spillway, conc. box culvert and gate valve. Plans deposit $15.

† Washington—ELIMINATING FIRE HAZARD—B.A. 8/8—Bonneville Power Admin., 827 N.E. Oregon St., Portland, Ore., elimination of fire hazard adjacent to Bonneville-Vancouver transmission lines, clear cutting 200 ft. wide for approx. 2 mi., Skamania Co. Inv. 5265. Plans deposit $5. L. C. Stallard, 827 N.E. Oregon St., Portland, engr.

Texas—HEADQUARTERS—B.A. 8/10—Karnes Electric Co-operative, Inc., Karnes City, service, warehouse, retail shop, $150,000. Plans deposit $25. Wyatt C. Hedrick, Kerr & Co., 609 Alamo Nat'l. Bldg., San Antonio, engrs. Bids 7/12 rejected CD 7/12, enter LB.

▲ Ont., Ottawa—RAILWAY CONSTRUCTION—B.A. 8/15—Can. & Gen. Finance Corp., c/o Federal Dist. Comm., 241 Cooper Ave., grading about 9½ mi., tracks and yard facilities, bridges, culverts, etc. for Cut-off Line south of Walkley Rd., 2,200 ft. long bridge with approaches over Rideau Rd., 15 ft. above present road. Approx. $1,500,000-$1,750,000.

N. Y., Brooklyn—WAR MEMORIAL—B.A. 8/16—Dist. Atty. Kings Co., 360 Adams St., Brooklyn, receive proposal consts. for Brooklyn War Memorial Bldg., Fulton St., $485,000. CD 6/27/49.

Neb., Falls City—SWIMMING POOL—B.A. 8/21—City, Falls City, swimming pool, $63,850. CD 11/30/49.

Miss., Bonneville—NATURAL GAS SYS.—B.A. 8/22—City, Bonneville, natural gas sys., T. D. Waters Jr., Okolona, engr. CD 6/27.

LOW BIDDERS

Ark., Conway—DAM—Arkansas Game & Fish Comm., L. Fork Rock consts. dam on Palarm Creek from R. W. Hamilton, Van Buren, $62,275. T. C. Fricke, Stuttgart, engr.

California—FISH HATCHERY—State Div. Architecture, P. Wks. Bldg., Sacramento, July 18, improve to Mt. Shasta Fish Hatchery Proj. 1, Sierkrest Co., from Carl N. Swenson Co., 1095 Stockton Ave., San Jose, $68,402. CD 6/29.

Calif., Stockton—UNDERGROUND SPRINKLER SYSTEM—City, City Hall, July 17, underground sprinkler sys. for new municipal golf course from Arthur F. Brude & Carl Rae, Palo Alto, Cal., 1, $61,188; 2, $60,700. H. W. Dunlap, City Hall, City engr.

Fla., Fort Myers—MOTOR COURT—Jim Reed, Jr., Ft. Myers, motor court from Joe R. Rice, Ft. Myers, $171,000. CD, 7/10.

Mo., Kansas City—POOL—City, c/o Park Bd., City Hall, Zone 1, outdoor swimming pool, from Yarp Bros. Constr. Co., 1024 E. 19 St., Zone 8, $77,265, and 502 cu. yd. parking lot from Swenson Constr. Co., 6001 E. 37 St., Zone 3, $29,193, both Swope Park Zone. CD 11/10/49.

Missouri—RURAL DISTRIBUTION LINES—Farmers Electric Cooperative, E. E. Wood, mgr., Chillicothe, bond 13 270 poles, 50 cross arms, 10 anchors, 10 Delta Pikes, Dekalb, Livingston Line Clusters, Chillicothe, Carroll and Ray Counties, being Mo. 42, Caldwell County, 174, from Berger Constr. Co., Highgate $422,072. CD 6/30.

▲ N. Y., Jones Beach—MARINE STADIUM—Jones Beach State Parkway Auth., Babylon, Lake Shore Park, Babylon, Long Isl., superstructure for Marine Stadium at Jones Beach State Park from Conc. Steelfield, Wilson & Kluge, Inc., 247 Park Ave., New York, $1,897,403. CD 6/27.

CONTRACTS AWARDED

▲ California—DAM, etc.—Pacific Gas & Electric Co., 245 Market St., San Francisco, constr. 4 dams and 1,044 ft. 14,500-ft. water tunnel, Rock River Development on California's Mokelumne River, to Utah Constr. Co., N. San Lake City, Utah, Total est. $11,000,000. CD 10/1 46.

Calif., Los Angeles—RAILROAD TRACKAGE, etc.—City Hollow Depts., City Hall, install railroad trackage and tunnels on Chauncey St. Terminal Island, Spec. 1151, to William A. Smith Constr. Co., 108 W. 6th St., Los Angeles, $61,000. Bids 7/12, awarded 7/19. CD 5/27/49.

Louisiana—OIL LINES—Federal Oil Co., Lake Charles, 40 mi. 6-in. crude oil lines, Lake Charles area, to Agnes Gas Co., Corp., 732 N. Dresden St., Houston, Tex., $565,000. CD 7/20.

Fla., Tallahassee—TRANSMISSION LINES—City, transmission lines from city power plant to St. Marks to Tallahassee to W. L. Hall & Son, 3 Natural Bldg., Birmingham, Ala., $508,672. CD 7/20, under LB.

N. Y., Syracuse—SUBWAY STATION—Bertram B. Talins, Supt. P. Wks., State Office Bldg., Albany, two 2,642 ft. subway/mezzanine stations, 1 near west end of race track, Jamesville Turnpike, other, Syracuse Expressway and State Fair, to Eaton Constr. Co., Inc., Lincoln Bank Bldg., $69,731.

Proposal Advertisements see pp. 85 to 89

OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY.

Bids: August 14, 1950 (5051)

State Road Work

STATE DEPARTMENT OF PUBLIC WORKS
BUREAU OF CONTRACTS & ACCOUNTS
ALBANY, N. Y.

Sealed proposals will be received by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. until ten-thirty o'clock A.M., Advanced Standard Time, on FRIDAY, AUGUST 11, 1950, for project in the following county:

County	Deposit plans	Bid deposit	Type	Miles	Engineer's estimate
Queens	$10.00	$2,400	Directional Signs	3.49	$44,000

Maps, plans, specifications, and estimates may be obtained at the office of the Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineer, J. J. Barry, Montauk Highway at Little East Neck Road Babylon, Long Island, N. Y., and may be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated. A refund will be made in full to bidders for return of one set, in good condition, within 10 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

P. D. TALLAMY
SUPT. OF PUBLIC WORKS

Bids: September 6, 1950 (5061)

Improvements to Water Works System

CITY OF CAMBRIDGE, MASS.
Purchasing Department

Sealed bids for constructing water works improvements will be received by the Purchasing Department, City Hall, Cambridge, Massachusetts, until 12:00 o'clock noon daylight saving time September 6, 1950, and at that time and place publicly opened and read. Work is to be done under three contracts all of which are to be awarded as a group to one bidder. Incomplete bids on all three contracts will be considered. Contracts are described as follows:

(1) Improvements to Existing Water Treatment Plant.

(2) Constructing High Lift Pumping Station with Appurtenances.

(3) Constructing Three Connections between the Cambridge and Mlst' Water Systems.

(1) Work to be done on contract for improvements to water treatment plant includes constructing flocculation chambers, building concrete trays within existing sedimentation basins, valve chamber, valves, meters and miscellaneous chambers and piping, and cleaning and lining 1,300 ft. of 42-inch cast iron pipe. City of Cambridge will furnish flocculation equipment for installation in flocculation chambers. All other materials and equipment to be furnished by bidder.

(2) Work under pumping station contract consists of constructing a new high lift pumping station and corridor connecting to existing filter building. Building will have concrete foundation with brick and tile superstructure. Work also includes furnishing and installing chemical feed facilities, cast iron force mains, gate valves, Venturi meter and miscellaneous piping and equipment within station. City of Cambridge will furnish three 12 mgd pumps with motors and main station switchboard, all for installation under this contract. All other equipment and materials including equipment for a main sub-station including two 1,500 kva transformers and auxiliary equipment are to be furnished and installed as a part of this contract.

Subbids are to be submitted only in connection with contract for construction of the pumping station and are as follows:

Plumbing
Heating and Ventilating
Roofing
Electrical

(3) The three connections to be made are located at Porter Square 16-in. Cambridge Common 20-in. and Norfolk Street 16-in. Work includes installing CI pipe and fittings, gate valves, Venturi meters, pressure reducing valves and controls, and the construction of buildings and chambers. All major items of equipment such as CI pipe, fittings, gates, meters, pressure reducing valves, controls, etc., to be furnished by City.

As an approximate indication of extent of work it is stated that total cost of three contracts will exceed $200,000.

Plans and contract documents may be secured from Purchasing Department, City Hall, upon following basis of deposits and refunds: Refunds will be made only to bidders or to others returning documents within ten days after opening.

Complete set (3 contracts) Deposit $50 Refund $25.

Individual contracts, each Deposit $25 Refund $15.

Plans and specifications may be examined at office of Camp, Dresser & McKee, Consulting Engineers, 6 Beacon Street, Boston, Massachusetts.

Bid security at least 5% of total bid price, bid bond or certified check; performance bond 100%.

Wage rates as determined by Massachusetts Department of Labor and Industries; copies attached to contract documents.

City reserves right to waive any informality in or reject any or all bids.

JOHN H. REDICAN
Purchasing Agent

for
DIRECT CONTACT
with the
MOST ACTIVE BUYERS
throughout the field of
ENGINEERING
CONSTRUCTION—
Use the
Searchlight Section
ENGINEERING NEWS-RECORD

OFFICIAL PROPOSALS
(Continued from page 85)

Bids: August 22, 1950 (891)

Construction of Taxiway

Richmond, Virginia

SEALED PROPOSALS WILL BE RECEIVED AT THE OFFICE OF THE CITY PURCHASING AGENT, 4TH FLOOR, MOSQUE BUILDING, LAUREL & MAIN STREETS, RICHMOND, VIRGINIA, UNTIL BUT NOT LATER THAN 11 o'CLOCK A. M., August 22, 1950, for the construction of a center taxiway from N/S Runway to S/E end of NW-SE Runway at Richard E. Byrd Flying Field, Richmond, Virginia, which includes the following: 27,300 Cu. Yds. Earth Excavation, 26,500 Sq. Yds. 10" Plain Concrete.

Form of proposal, Plans and Specifications may be obtained upon application to the Director of Public Works, 217 Governor Street, Richmond, Virginia.

A charge of $10.00 will be made by the Department of Public Works for these plans, etc., which sum will not be refunded unless a bona fide bid is submitted, and the plans, etc., returned.

Each proposal must be accompanied by a certified or cashier's check made payable to the City of Richmond, equal to 5% of the amount of the proposal, or bid bond equal to 6% of the amount of the proposal.

The contract may be awarded by the Purchasing Agent to the lowest responsible bidder, who shall be determined in accordance with rules and regulations governing purchases or contracts adopted and established by the Council, and in accordance with and pursuant to sections 5.09, 5.11 and 12.07 of the city charter.

J. W. Huffman,
City Purchasing Agent.

Bids: August 15, 1950 (886)

Construction of Water Distribution System

Sealed proposals will be received by the Youngstown Borough Municipal Authority at the Borough Building, Borough of Youngstown, Westmoreland County, Pennsylvania, until 8:00 o'clock P.M. (Eastern Daylight Saving Time) on Tuesday, August 15, 1950, at which time and place the bids will be publicly opened and read aloud, for the Construction of Water Distribution System, Transmission Main and Appurtenances. Copies of the Plans, Specifications and other Contract Documents can be obtained from Richard J. Hartman, Consulting Engineer, 222 North Third Street, Harrisburg, Pennsylvania, upon a deposit of $25.00 for each set of documents. If documents are returned in good condition within five (5) days after the opening of the bids, one-half amount ($12.50) of the deposit for one set will be refunded. If the documents are not returned within the time stated, the entire amount of the deposit will be forfeited. A certified check in the amount of 5% of the base bid must be submitted with the proposal as bid security.

No bid may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

The Youngstown Borough Municipal Authority of the Borough of Youngstown reserves the right to waive any informalities in or reject any or all bids.

Richard E. McKelvey, Secretary
Youngstown Borough Municipal Authority
Borough of Youngstown, Pennsylvania

Bids: August 22, 1950 (882)

Centrifugal Pumping Units

GOVERNMENT OF PUERTO RICO
PUERTO RICO AQUEDUCT AND SEWER AUTHORITY

Sealed bids will be received by the Puerto Rico Aqueduct and Sewer Authority until 2 o'clock P.M., August 22, 1950 at the office of the Authority in Santurce, Puerto Rico, mailing address Executive Director, Puerto Rico Aqueduct and Sewer Authority, Post Office Box 4267, San Juan 12, Puerto Rico, for Section I of the Rio Grande de Loiza Development.

The work includes furnishing, testing, delivering F.A.S. Port of Embarkation and entrambering four synchronous motor-driven centrifugal pumping units, two of 7,000 gpm capacity each against a total head of 190 feet, and two of 10,000 gallons per minute capacity at 170 feet total head, and providing the services of a competent engineer or superintendent for such period as is ordered by the Authority to assist in erecting and testing the equipment.

Copies of the plans and specifications may be examined and obtained at the office of the Authority at the office of Black, Sivalls & Bryson, Inc., Consulting Engineers, 1113 East 19th Street, New York 3, N. Y. and Industria Algodonera Building, Santurce, Puerto Rico (mailing address Post Office Box 8861, Fernandez Juncos Station, Santurce, Puerto Rico), upon deposit of Twenty Dollars, which will be refunded upon return of the plans and specifications in good condition within 20 days after the date on which bids are received.

Bids will be received only from persons or firms who have requested plans and specifications under their own names. These documents cannot be obtained later than August 17th, 1950.

Each proposal must be accompanied by a certified check or bid bond from a surety company authorized to do business in Puerto Rico and satisfactory to the Authority in amount equal to ten per cent of the proposal.

The Authority reserves the right to consider bids for thirty days after the receipt, to waive any informalities, to accept any bid or to reject any or all of them.

PUERTO RICO AQUEDUCT AND SEWER AUTHORITY
By SERGIO CUEVAS,
Executive Director

Bids: September 19, 1950 (877)

Construction of Sewage Collection and Treatment Works

C-331

CITY OF SAGINAW, MICHIGAN
BIDS—SEPTEMBER 19, 1950

Sealed proposals will be received by the City of Saginaw, Michigan, in the office of Mr. Roy A. Benway, Purchasing Officer, Rm. 104, City Hall, Saginaw, Michigan, up to 2:00 p.m., E.S.T., September 19, 1950, for the construction of the following Sewage Collection System, Treatment Plant, and appurtenant works:

DIVISION A—COLLECTING AND INTERCEPTING SEWERS

SECTION NO. I
12,556 ft—72" tunnel sewer
11—Miscellaneous manholes, etc.
SECTION NO. II
4,900 ft—48" tunnel sewer
1,897 ft—54" tunnel sewer
3,623 ft—66" tunnel sewer
3,962 ft—72" tunnel sewer
1,162 ft—36" open cut sewer
26—Miscellaneous manholes, etc.
SECTION NO. III
20 ft—48" tunnel sewer
1,050 ft—42" land section river crossing
544 ft—42" subaqueous section river crossing
6,189 ft—66" tunnel sewer
565 ft—30" open cut sewer
91 ft—36" open cut sewer
1,562 ft—72" open cut sewer
60 ft—72" outlet
11—Miscellaneous manholes, etc.
SECTION NO. IV
7,448 ft—66" tunnel sewer
3,700 ft—78" tunnel sewer
882 ft—48" open cut sewer
19—Miscellaneous manholes, etc.
SECTION NO. V
13—Regulator and backwater chambers
SECTION NO. VI
16—Regulator and backwater chambers

DIVISION B—STORM WATER AND FLOOD PUMPING STATIONS

SECTION NO. I—Webber St. Flood Pumping Station
SECTION NO. II—Weiss St. Flood Pumping Station
SECTION NO. III—Fourteenth St. Pumping Station
SECTION NO. IV—Hancock St. Flood Pumping Station
SECTION NO. V—Emerson St. Flood Pumping Station
SECTION NO. VI—Storm Water Pumping Units

DIVISION C—SEWAGE AND GARBAGE TREATMENT PLANT

DIVISION D—SLUDGE AND GARBAGE INCINERATOR

The Proposal Contract Form, Plans and Specifications under which the work will be done are on file and may be examined at the office of the Purchasing Officer, Room 104, City Hall, Saginaw, Michigan, or at the office of the Consulting Engineers, Hubbell, Roth & Clark, Inc., 2640 Buhl Building, Detroit 26, Michigan. Copies of each division of the work may be obtained from the Purchasing Officer or the Consulting Engineers by making a deposit of twenty-five dollars ($25.00) for each set of plans and accessory documents which deposit will be refunded upon the return of plans and contract documents in good condition within thirty (30) days after the closing of bids.

A certified check or bidder's bond for a sum not less than five per cent (5%) of the proposal, will be required with each proposal.

All bids will be publicly opened and read.

All proposals shall be based on completion of all work by March 31, 1952.

The City of Saginaw reserves the right to reject any or all proposals and to waive any informality in bidding, and to accept any proposal for any section of each division of the work. No proposal may be withdrawn for a period of thirty (30) days after the scheduled closing time for acceptance of the proposals.

The successful bidder will be required to furnish satisfactory performance, labor, and material bonds.

ROY A. BENWAY,
Purchasing Officer.
July 11, 1950.

Bids: October 20, 1950 (898)

Construction of Insular Psychiatric Hospital

GOVERMENT OF PUERTO RICO
DEPARTMENT OF THE INTERIOR
BUREAU OF BUILDINGS
SANTURCE, PUERTO RICO

Sealed proposals will be received by the Commissioner of the Interior of Puerto Rico at his office, Santurce, Puerto Rico, until 2:00 P.M. on October 20, 1950, and then be publicly opened and read aloud, for furnishing all plant, labor, and materials and performing all work required for THE CONSTRUCTION OF VARIOUS BUILDINGS FOR THE INSULAR PSYCHIATRIC HOSPITAL AT RIO PIEDRAS, PUERTO RICO.

Prospective bidders may submit bids for any one or all or any combination of the following Contract Areas as indicated on the Site Plat:

Contract Area I
1—Building "A"—Administration and Reception Building
Contract Area II
1—Building "B"—Tuberculosis Building
Contract Area III
1—Building "C"—Chronic Disturbed Building—Men
2—Building "D"—Chronic Disturbed Building—Women
3—Building "E"—Industrial Patients Building—Men
4—Building "G"—Industrial Patients Building—Women
5—Building "H"—Industrial Patients Building—Women
6—Building "J"—Inactive Patients Building

Plans, specifications, and all pertinent contract documents may be obtained at:
1—Department of the Interior—Santurce, Puerto Rico
2—Office of Puerto Rico, 1026 17th Street, N.W., Washington 6, D.C.
3—Office of Puerto Rico, 1881 Broadway, New York, N. Y.

upon deposit in cash, money order, or certified check payable to the Commissioner of the Interior of Puerto Rico in the amount or amounts indicated below:

1. Complete Plans and Specification, $225.00; 2. Architectural Section & Specification, $90.00; 3. Structural Section & Specification, $55.00; 4. Mechanical Section & Specification, $80.00.

The full amount of the deposit or deposits will be refunded to the depositor upon return of the above documents in good condition within a period of THIRTY (30) DAYS after the date of the opening of bids.

Each proposal must be accompanied by a provisional bond in cash, bid bond, or certified check payable to the Commissioner of the Interior of Puerto Rico for not less than the amounts indicated in the proposal.

Special attention is called to the bidders that plans, specifications, and contract documents may be obtained only up to Sept. 30, 1950, and that any bid which does not contain the prices written in letters and figures will be rejected.

The Board of Awards reserves the right to reject any or all bids and to waive the formalities.

Engineer's Estimate
Contract Area I $1,050,000.00
Contract Area II 500,000.00
Contract Area III 1,625,000.00

JORGE J. JIMENEZ,
Commissioner of the Interior

(Continued on page 87)

OFFICIAL PROPOSALS
(Continued from page 86)

Bids: August 16, 1950 (900)

Construction of Sewage Pumping Station

CITY OF LACONIA
STATE OF NEW HAMPSHIRE

Sealed proposals for the construction of a sewage pumping station in the city of Laconia, New Hampshire, as described herein, addressed to the City Engineer, City of Laconia, New Hampshire, and endorsed "Proposal for the Construction of Keyser Court Sewage Pumping Station, Laconia, New Hampshire" will be received at the office of the City Engineer, City Hall, Laconia, New Hampshire, until 2:00 p.m. Eastern Daylight Saving Time on August 16, 1950, and will then be publicly opened and read aloud.

Drawings, specifications, and other contract documents may be obtained at the office of McGalll & Eddy, 1500 Statler Building, Boston 16, Massachusetts, or from the office of the City Engineer, City Hall, Laconia, New Hampshire, upon the deposit payment of ten (10) dollars. Said deposit will be refunded when such documents are returned in good condition within thirty (30) *days after receipt of bid*.

The city of Laconia, New Hampshire, reserves the right to waive any informalities in or to reject any or all bids.

Each proposal must be accompanied by a certified check in an amount not less than five (5) percent of the total bid or by a bid bond in like amount.

Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under the contract.

No bidder may withdraw his bid within thirty (30) days after the actual date of the opening thereof.

A surety bond by a company satisfactory to the City and in an amount not less than one hundred (100) percent of the contract price will be required from the successful bidder.

CITY OF LACONIA, NEW HAMPSHIRE
By: Arnold J. O'Mara
City Engineer
Street Commissioner
Superintendent of Sewers

Bids: August 21, 1950 (895)

General Construction and Equipment

MADISON-CHATHAM JOINT MEETING
MORRIS COUNTY
NEW JERSEY
SEWAGE TREATMENT PLANT
ADDITIONS AND IMPROVEMENTS

Contract No. 2

Sealed proposals for additions and improvements to the existing Madison-Chatham Joint Meeting Sewage Treatment Plant, Contract No. 2, General Construction and Equipment, will be received by the Joint Meeting at the meeting place of the said Joint Meeting at the Hartley Dodge Memorial, Madison, New Jersey at 8:30 o'clock P.M. (D.S.T.) on August 21, 1950, and at that time and place will be publicly opened and read aloud. The proposals shall be in accordance with specifications, drawings, terms of the proposed contract and form of bond on file with said Joint Meeting. Proposals must be submitted in person by the bidder or by a responsible agent of the bidder.

Contract No. 2 includes the construction of reinforced concrete aeration tank, number, settling tanks, diversion tanks, and chlorine contact tank with appurtenances and equipment, together with interconnecting flumes and piping, and construction of a garage and chlorine building. Miscellaneous alterations to existing structures and piping together with provisions of certain additional equipment are included.

No bids will be received unless made in writing on forms furnished and unless accompanied by a certified check made payable to the Madison-Chatham Joint Meeting, for an amount not less than ten (10) percent of the amounts of the base bid.

Bidders are notified that under Chapter 180 of the Laws of 1936, State of New Jersey, they will be required to furnish a financial statement and to submit answers to a standard form of questionnaire providing a complete statement of the bidder's ability, financial standing, and experience in performing work of the type contemplated, before such bidder can be furnished plans and specifications.

The Joint Meeting, through its Engineers, may refuse to furnish such bidder whose statement is unsatisfactory, with plans and specifications.

The Joint Meeting reserves the right to reject any or all bids, and to accept that one which, in its judgment, best serves its interests, and the interests of the Borough of Madison and the Borough of Chatham, N. J.

No bid may be withdrawn for thirty (30) days after scheduled closing time for receipt of bids.

The Joint Meeting reserves the right to delay the awarding or rejection of bids for a period of thirty (30) days following scheduled time for receipt of bids.

Bidders must agree that, if successful, they will protect and save harmless the Boroughs of Madison and Chatham and the Madison-Chatham Joint Meeting from any and all suits and actions instituted against them by reason of the operations of said bidders, and to defend any such suits and actions at their own proper cost and expenses.

Plans and specifications may be seen on or after July 17, 1950, at the office of the Superintendent of the Joint Meeting Plant, Passaic Avenue, Chatham, New Jersey and may be seen or obtained at the office of the Consulting Engineer, Elson T. Killam, 140 Cedar Street, New York City, upon payment of $30.00 for each set. The deposit will be returned only to contractors submitting bonafide proposals who return the plans in good condition, within ten (10) days after opening of bids.

By Order of the Secretary of the
Madison-Chatham Joint Meeting
Signed C. J. Mercer
Secretary of the Joint Meeting
ELSON T. KILLAM
Hydraulic & Sanitary Engineer
New York City
July 1950

Bids: August 21, 1950 (896)

Electrical Work

MADISON-CHATHAM JOINT MEETING
MORRIS COUNTY
NEW JERSEY
ADDITIONS AND IMPROVEMENTS OF
JOINT MEETING SEWAGE
TREATMENT PLANT

CONTRACT NO. 3

Sealed proposals for the construction of additions and improvements to the existing Joint Meeting Sewage Treatment Plant, located in Chatham, N. J., Contract No. 3 —Electrical Work, as described herein, including the furnishing of all labor and materials for the Madison-Chatham Joint Meeting, addressed to the Secretary of said Joint Meeting, will be received at the meeting place of the said Joint Meeting at The Hartley Dodge Memorial, Madison, N. J., at 8:30 o'clock P.M. (D.S.T.) on August 21, 1950, and at that time and place will be publicly opened and read aloud. The proposals shall be in accordance with specifications, drawings, terms of the proposed contract and form of bond on file with said Joint Meeting. Proposals must be submitted in person by the bidder or by a responsible agent of the bidder.

No bids will be received unless made in writing on forms furnished, and unless accompanied by a certified check made payable to the Madison-Chatham Joint Meeting for an amount not less than ten (10) percent of the amount of the base bid.

Bidders are notified that under Chapter 180 of the Laws of 1936, State of New Jersey, they will be required to furnish a financial statement and to submit answers to a standard form of questionnaire providing a complete statement of the bidder's ability, financial standing, and experience in performing work of the type contemplated, before such bidder can be furnished plans and specifications.

The Joint Meeting, through its Engineers, may refuse to furnish such bidder whose statement is unsatisfactory, with plans and specifications.

The Joint Meeting reserves the right to reject any or all bids, and to accept that one which, in its judgment, best serves its interests, and the interests of the Borough of Madison and the Borough of Chatham, N. J.

No bid may be withdrawn for thirty (30) days after scheduled closing time for receipt of bids.

The Joint Meeting reserves the right to delay the awarding or rejection of bids for a period of thirty (30) days following scheduled time for receipt of bids.

Bidders must agree that, if successful, they will protect and save harmless the Boroughs of Madison and Chatham and the Madison-Chatham Joint Meeting from any and all suits and actions instituted against them by reason of the operations of said bidders, and to defend any such suits and actions at their own proper cost and expenses.

Plans and specifications may be seen on or after July 17, 1950, at the office of the Superintendent of the Joint Meeting Plant, Passaic Avenue, Chatham, New Jersey and may be seen or obtained at the office of the Consulting Engineer, Elson T. Killam, 140 Cedar Street, New York City, upon payment of $30.00 for each set. The deposit will be returned only to contractors submitting bonafide proposals who return the plans in good condition, within ten (10) days after opening of bids.

By Order of the Secretary of the
Madison-Chatham Joint Meeting
Signed C. J. Mercer
Secretary of the Joint Meeting
ELSON T. KILLAM
Hydraulic & Sanitary Engineer
New York City
July 1950

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 5151) will be received by Bureau of Reclamation, Hot Springs, South Dakota, August 21, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of Angostura Power Plant, Missouri River Basin Project. The work is situated approximately 19 miles south of Hot Springs, South Dakota. Principal items are approximately: 2,000 cu. yds.; excavation; 400 cu. yds. concrete; installing one 1,333-kva generator; furnishing and installing miscellaneous electrical equipment and other work. Time allowed for completion will be 270 days. For particulars address Bureau of Reclamation, Hot Springs, South Dakota, or Building I-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(904)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 5134) will be received by Bureau of Reclamation, Denver, Colorado, August 24, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of Rattlesnake Tunnel, Estes Park-Foothills power aqueduct, Colorado-Big Thompson Project. The work is situated approximately 13 miles west of Loveland, Colorado. Principal items are approximately: excavation in open cut, 7,000 cu. yds.; excavation in tunnel, 44,000 cu. yds.; furnishing and installing steel tunnel supports, 450,000 lbs.; concrete lining in tunnel, 16,000 cu. yds.; and other work. Time allowed for completion will be 700 days. For particulars, address Bureau of Reclamation, Loveland, Colorado, or Building I-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(903)

(Continued on page 88)

OFFICIAL PROPOSAL

RATE: $1.00 per line (or fraction) per insertion.

CLOSING DATE: 12:00 p.m. Friday for following Thursday.

SEND COPY: Official Proposal Division, Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

OFFICIAL PROPOSALS
(Continued from page 87)

Bids: August 21, 1950 (893)

Sanitary Sewer & Sewage Pumping Stations

NOTICE is hereby given that sealed proposals will be received by The Township Committee of The Township of Millburn in the County of Essex, New Jersey, for the construction of 8600 feet, more or less, of 10 inch to 18 inch sanitary sewer, 2800 feet, more or less, of 10 inch to 12 inch force main, two (2) sewage pumping stations, in Canoe Brook Road, White Oak Ridge Road, and adjacent rights of way, in The Township of Millburn in the County of Essex, New Jersey, together with such other items of construction incidental to the completion of the project as may be deemed necessary and advisable, and opened and read in public at the Township Hall on Monday, August 21st, 1950 at 8:30 o'clock P.M., Daylight Saving Time.

On and after August 1st, 1950, plans, specifications and forms of proposal may be examined by prospective bidders at the office of the Township Engineer, Washington School, Township of Millburn, N. J. during business hours.

Bids must be made on proposal forms to be furnished by said Township Engineer, in the manner designated therein and required by said specifications, and must be enclosed in sealed envelopes, bearing the name and address of bidder and name of the project on outside, addressed to the Township Committee, Township Hall, Township of Millburn, N. J.

Each bid must be accompanied by a certified check made payable to the Township of Millburn in the County of Essex, in an amount equal to ten per cent of the total of said bid, and also by an agreement in writing by a Surety Company authorized to do business in the State of New Jersey approved by said Township Committee, to the effect that it will furnish the bonds required by the specifications.

The Township Committee of the Township of Millburn, in the County of Essex, N. J. reserves the right to waive informalities, to reject any or all bids and to accept the bid that in their judgement will best serve the Township of Millburn in the County of Essex, N. J.

THEODORE L. WHOMAYER
Township Clerk
Millburn, N. J.

Bids: August 16, 1950 (899)

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK

Repaving and Repair of Railroad Track in South Dock Street

CONTRACT PN-32

Sealed proposals for repaving and repair of railroad track in South Dock Street in Port Newark will be received in the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, N. Y., until 2:00 P.M., Wednesday, Aug. 16, 1950 and thereafter in the Auditorium at the same address until 2:30 P.M. on the same date, at which latter time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $10 per set. The deposit will be remitted if the documents are returned in good condition not later than 10 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, August 3, 1950.

COMMONWEALTH OF VIRGINIA, DEPARTMENT OF HIGHWAYS, RICHMOND, VIRGINIA. Sealed Bids will be received at the Department of Highways Room 100, Central Highway Office Building, 1221 E. Broad St., Richmond, Virginia, until 10 A.M., Thursday, August 17, 1950, for the repowering and reconditioning Ferryboat "Ocean City". Contractors will be shown over this work at 8 A.M. and 2 P.M., Monday, August 7, 1950 at Pine Beach Terminal, Norfolk, Virginia. Plans and specifications are on file at the Virginia Department of Highways, Richmond, Virginia. Contractors desiring to bid on this work shall prequalify prior to obtaining proposal and plans. Plans will be furnished free of charge with bidding proposal.

(902)

OFFICIAL PROPOSALS

Bids: August 16, 1950 (901)

Construction of Sewer Crossing of Winnepesaukee River

CITY OF LACONIA
STATE OF NEW HAMPSHIRE

Sealed proposals for the construction of the Winnepesaukee River Sewer Crossing in the city of Laconia, New Hampshire, as described herein, addressed to the City Engineer, city of Laconia, New Hampshire, and endorsed "Proposal for the Construction of River Crossing, Contract #2, Laconia, New Hampshire" will be received at the office of the City Engineer, City Hall, Laconia, New Hampshire, until 2:00 p.m., Eastern Daylight Saving Time, August 16, 1950, and will then be publicly opened and read aloud.

Drawings, specifications, and other contract documents may be obtained at the office of Metcalf & Eddy, 1300 Statler Building, Boston 16, Massachusetts, or from the office of the City Engineer, City Hall, Laconia, New Hampshire, upon the deposit payment of ten (10) dollars. Said deposit will be refunded when such documents are returned in good condition within thirty (30) days after receipt of bids.

The city of Laconia, New Hampshire reserves the right to waive any informalities in or to reject any or all bids.

Each proposal must be accompanied by a certified check in an amount not less than five (5) percent of the total bid or by a bid bond in like amount.

Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under the contract.

No bidder may withdraw his bid within thirty (30) days after the actual date of the opening thereof.

A surety bond by a company satisfactory to the City and in an amount not less than one hundred (100) percent of the total bid will be required from the successful bidder.

CITY OF LACONIA, NEW HAMPSHIRE
By: Arnold J. O'Mara,
City Engineer
Street Commissioner
Superintendent of Sewers

Bids: August 14, 1950 (907)

Furnishing and Delivering Disc Water Meters

WASHINGTON SUBURBAN SANITARY COMMISSION
CONTRACT NO. 814-W

Sealed proposals for furnishing and delivering three-thousand (3,000) 5/8-inch disc water meters will be received in the office of the Purchasing Agent, Room 3, of the Washington Suburban Sanitary Commission, 4017 Hamilton Street, Hyattsville, Maryland until Monday, August 14th, 1950 at 10:00 A. M. Eastern Daylight Saving Time, at which time and place they will be publicly opened and read.

Specifications may be obtained from W. R. Douglas, Purchasing Agent of the Commission, Hyattsville, Maryland.

Dwight B. Gall, Chairman
Warren Browning
Leland G. Worthington
Commissioners

CONTRACTORS

Watch this Section

for New Projects

Publish your announcement thru the "Proposals Section" of Engineering News-Record and get their bids.

SEARCHLIGHT SECTION

This index is published as a convenience to the readers. Every care is taken to make it accurate, but Searchlight Section assumes no responsibility for errors or omissions.

Aberthaw Co. 94, 96
Air Compressor Rental Co. 94, 98
Albrecht Co., E. J. 96
American Air Compressor Corp. 97
American Construction Co. 98

Babcock Equipment Co., Inc. 97
Beers, J. H. 96
Bendix Machinery Co., Inc. 94
Berger & Sons Inc., C. L. 92
Berkeley Distributors, Inc. 94
Bertucci 98
Bixby, R. W. 90
Boyce Co. 91
Boyer, R. H. 95
Brunson Instrument Co. 92
Buff 92

C. & S. Contracting Co., Inc. 98
Canadian Brazilian Services, Ltd. 90
Clark-Wilcox Co. 94
Concrete Carriers Inc. 97
Construction Survey Coop. 91
Contractors Machinery Co. 94, 95

Darien 99
Davidson Pipe Co., Inc. 99
Detroit Civil Service Comm. 90
Drachman Steel Corp., Hy. 94

Edelen & Boyer Co. 98
Ellard Contracting Co. 96
Ellis-Novack Co. 97
Ennis Supply Co. 96
Eveready Supply Co., The 98
Equipment Corp. of America 95

Fehrs Tractor & Equipment Co. 94
Finn Co., N. A. 99
Forsythe Equipment Co. 96
Fort Wayne Structural Steel Co. 90
Foster Co., L. B. 99
Frank, M. K. 99
Frazier-Davis Construction Co. 94
Furnival Machinery Co. 94, 97, 99

Garage Co., Inc. 94
Glazer Steel Corp. 86
Greenpoint Iron & Pipe Co., Inc. 99
Greensburg Machine Co. 95
Groves & Sons Co., S. J. 94
Gurley W. & L. E. 92

Hickerson, Roy D. 92
Hodge & Hammond Inc. 94, 95, 97
Hosting Machinery Co. 96
Hudgins & Alfonso, Inc. 98

Institute of Engineers 91

Jaffe, Harry 91
Job Masters 90
Leonard, Richard H. 96

Lewis, Harry C. 94
Ludwig & Co., L. H. 96

McKee & Co., Arthur 90
Meagher & Sons, W. J. 96
Mississippi Valley Equipment Co. 95, 99
Moorman & Son, J. W. 99
Morrison Railway Supply Corp. 99

National Blue Print Co. 92
Northwestern Improvement Co. 96

O'Neill, A. J. 97

Queensboro Steel Corp. 98

Rupp Equipment Co. 98

Schoonmaker Co., Inc., A. G. 97
Shannon & Co., J. Jacob 92, 94
Sherman Transfer Co., Roger 96
Smith Inc., L. B. 93
Stanhope Inc., R. C. 97
Stone the Crane Man 98

Tamblyn System 91
Thompson Co., Inc., J. Parker 97
Tractor & Equipment Co. 95
Tyler Equipment Corp. 98

Van Houten Machinery Co. 94
Vulcan Iron Works 95

Walsh Co., Richard P. 95
Warren-Knight Co. 92
Weil & Co., J. H. 92
Weiss Co., B. M. 97
Wellworth Trading Co. 96
Whayne Supply Co., Roy C. 98
White Co., David 92
Williams Construction Co. 94
Wilson Engineering Corp. 91
Wenzel Machinery Rental & Sales Co. 98

OFFICIAL PROPOSALS
(Continued from page 88)

Bids: August 21, 1950 (894)

Relief Trunk Sewer

NOTICE TO BIDDERS
MADISON-CHATHAM JOINT MEETING
MORRIS COUNTY
NEW JERSEY

CONTRACT NO. 1

Sealed proposals for Contract No. 1 involving the construction of a relief trunk sewer to the existing Joint Meeting Sewage Treatment Plant located in Chatham, New Jersey, as described herein, including the furnishing of all labor and materials, for the Madison-Chatham Joint Meeting, addressed to the Secretary of said Joint Meeting, will be received at the meeting place of the said Joint Meeting at the Hartley Dodge Memorial, Madison, N. J. at 8:30 o'clock P.M. (D.S.T.) on August 21, 1950, and at that time and place will be publicly opened and read aloud. The proposals shall be in accordance with specifications, drawings, forms of the proposed contract and form of bond on file with said Joint Meeting. Proposals must be submitted in person by the bidder or by a responsible agent of the bidder.

No bids will be received unless made in writing on forms furnished, and unless accompanied by a certified check made payable to the Madison-Chatham Joint Meeting for an amount not less than ten (10) percent of the amount of the base bid.

Bidders are notified that under Chapter 180 of the Laws of 1926, State of New Jersey, they will be required to furnish a financial statement and to submit answers to a standard form of questionnaire providing a complete statement of the bidder's ability, financial standing, and experience in performing work of the type contemplated, before such bidder can be furnished plans and specifications.

The Joint Meeting, through its Engineers, may refuse to furnish such bidder whose statement is unsatisfactory, with plans and specifications.

The Joint Meeting reserves the right to reject any or all bids, and to accept that one which, in its judgment, best serves its interests, and the interests of the Borough of Madison and the Borough of Chatham, N. J.

No bid may be withdrawn for thirty (30) days after scheduled closing time for receipt of bids.

The Joint Meeting reserves the right to delay the awarding or rejection of bids for a period of thirty (30) days following scheduled time for receipt of bids.

Bidders must agree that, if successful, they will protect and save harmless the Boroughs of Madison and Chatham and the Madison-Chatham Joint Meeting from any and all suits and actions instituted against them by reason of the operations of said bidders, and to defend any such suits and actions at their own proper cost and expenses.

Plans and specifications may be seen on or after July 17, 1950, at the office of the Superintendent of the Joint Meeting Plant, Passaic Avenue, Chatham, New Jersey and may be seen or obtained at the office of the Consulting Engineer, Elson T. Killam, 140 Cedar Street, New York City, upon payment of $30.00 for each set. The deposit will be returned only to contractors submitting bonafide proposals who return the plans in good condition, within ten (10) days after opening of bids.

By Order of the Secretary of the
Madison-Chatham Joint Meeting
Signed C. J. Mercer
Secretary of the Joint Meeting

ELSON T. KILLAM
Hydraulic & Sanitary Engineer
New York City
July 1950

August 21, 1950 (895)

Heating and Ventilating Work

NOTICE TO BIDDERS
MADISON-CHATHAM JOINT MEETING
MORRIS COUNTY
NEW JERSEY
ADDITIONS AND IMPROVEMENTS OF
JOINT MEETING SEWAGE
TREATMENT PLANT
CONTRACT NO. 4

Sealed proposals for the construction of additions and improvements to the existing Joint Meeting Sewage Treatment Plant, located in Chatham, N. J., Contract No. 4—Heating and Ventilating Work, as described herein, including the furnishing of all labor and materials for the Madison-Chatham Joint Meeting, addressed to the Secretary of said Joint Meeting, will be received at the meeting place of the said Joint Meeting at The Hartley Dodge Memorial, Madison, N. J. at 8:30 o'clock P.M. (D.S.T.) on August 21, 1950, and at that time and place will be publicly opened and read aloud. The proposals shall be in accordance with specifications, drawings, forms of the proposed contract and form of bond on file with said Joint Meeting. Proposals must be submitted in person by the bidder or by a responsible agent of the bidder.

No bids will be received unless made in writing on forms furnished, and unless accompanied by a certified check made payable to the Madison-Chatham Joint Meeting for an amount not less than ten (10) percent of the amount of the base bid.

Bidders are notified that under Chapter 180 of the Laws of 1926, State of New Jersey, they will be required to furnish a financial statement and to submit answers to a standard form of questionnaire providing a complete statement of the bidder's ability, financial standing, and experience in performing work of the type contemplated, before such bidder can be furnished plans and specifications.

The Joint Meeting reserves the right to reject any or all bids, and to accept that one which, in its judgment, best serves its interests, and the interests of the Borough of Madison and the Borough of Chatham, N. J.

No bid may be withdrawn for thirty (30) days after scheduled closing time for receipt of bids.

The Joint Meeting reserves the right to delay the awarding or rejection of bids for a period of thirty (30) days following scheduled time for receipt of bids.

Bidders must agree that, if successful, they will protect and save harmless the Boroughs of Madison and Chatham and the Madison-Chatham Joint Meeting from any and all suits and actions instituted against them by reason of the operations of said bidders, and to defend any such suits and actions at their own proper cost and expenses.

Plans and specifications may be seen on or after July 17, 1950, at the office of the Superintendent of the Joint Meeting Plant, Passaic Avenue, Chatham, New Jersey and may be seen or obtained at the office of the Consulting Engineer, Elson T. Killam, 140 Cedar Street, New York City, upon payment of $30.00 for each set. The deposit will be returned only to contractors submitting bonafide proposals who return the plans in good condition, within ten (10) days after opening of bids.

By Order of the Secretary of the
Madison-Chatham Joint Meeting
Signed C. J. Mercer
Secretary of the Joint Meeting

ELSON T. KILLAM
Hydraulic & Sanitary Engineer
New York City
July 1950

OFFICIAL PROPOSALS

Secretary of said Joint Meeting, will be received at the meeting place of the said Joint Meeting at The Hartley Dodge Memorial, Madison, N. J. at 8:30 o'clock P.M. (D.S.T.) on August 21, 1950, and at that time and place will be publicly opened and read aloud. The proposals shall be in accordance with specifications, drawings, forms of the proposed contract and form of bond on file with said Joint Meeting. Proposals must be submitted in person by the bidder or by a responsible agent of the bidder.

No bids will be received unless made in writing on forms furnished, and unless accompanied by a certified check made payable to the Madison-Chatham Joint Meeting for an amount not less than ten (10) percent of the amount of the base bid.

Bidders are notified that under Chapter 180 of the Laws of 1926, State of New Jersey, they will be required to furnish a financial statement and to submit answers to a standard form of questionnaire providing a complete statement of the bidder's ability, financial standing, and experience in performing work of the type contemplated, before such bidder can be furnished plans and specifications.

The Joint Meeting reserves the right to reject any or all bids, and to accept that one which, in its judgment, best serves its interests, and the interests of the Borough of Madison and the Borough of Chatham, N. J.

No bid may be withdrawn for thirty (30) days after scheduled closing time for receipt of bids.

The Joint Meeting reserves the right to delay the awarding or rejection of bids for a period of thirty (30) days following scheduled time for receipt of bids.

Bidders must agree that, if successful, they will protect and save harmless the Boroughs of Madison and Chatham and the Madison-Chatham Joint Meeting from any and all suits and actions instituted against them by reason of the operations of said bidders, and to defend any such suits and actions at their own proper cost and expenses.

Plans and specifications may be seen on or after July 17, 1950, at the office of the Superintendent of the Joint Meeting Plant, Passaic Avenue, Chatham, New Jersey and may be seen or obtained at the office of the Consulting Engineer, Elson T. Killam, 140 Cedar Street, New York City, upon payment of $30.00 for each set. The deposit will be returned only to contractors submitting bonafide proposals who return the plans in good condition, within ten (10) days after opening of bids.

By Order of the Secretary of the
Madison-Chatham Joint Meeting
Signed C. J. Mercer
Secretary of the Joint Meeting

ELSON T. KILLAM
Hydraulic & Sanitary Engineer
New York City
July 1950

(892)

New Jersey Turnpike Authority

Sealed proposals will be received by the New Jersey Turnpike Authority for the following contracts:

CONTRACT NO. 40

The work to be performed under this Contract involves grading, drainage, pavement and interchange structure No. 1, at Route 44, removal of existing bridge and new Turnpike stream crossing Structure No. 2, at Salem Canal, underpass Structure No. 5 at Salem County Route 16; and incidental work in connection with the construction of the New Jersey Turnpike, Section 1, at Deepwater, in Salem County, New Jersey.

Principal items of work for this Contract include:

Excavation and Grading	130,000 Cu. Yds.
Topsoiling	70,000 Sq. Yds.
Removal of Existing Bridge	1 Lump Sum
Base Courses and Pavement	8,800 Sq. Yds.
Concrete	4,000 Cu. Yds.
Reinforcement Steel	545,000 Lbs.
Reinforced Concrete Pipe	
Various Sizes	1,200 Lin. Ft.
Structural Steel	2,000,000 Lbs.
Concrete Piles	20,000 Lin. Ft.
Treated Timber Piles	1,800 Lin. Ft.

OFFICIAL PROPOSALS

Contract documents may be seen and may be inspected by prospective bidders during office hours, on July 24, 1950, at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton, New Jersey and at the office of the Engineers, J. E. Greiner Company, 1201 St. Paul Street, Baltimore, Maryland.

Contract documents will be furnished for $5.00 for each set, upon application to the Authority. The payment will not be refunded and contract documents are not required to be returned. Plans showing grading cross sections may be examined at the office of the Authority or at the office of the Engineers.

CONTRACT NO. 56

The work to be done under this Contract involves the construction of the substructures and superstructures of the Hackensack Creek Overpass and the Bellman Creek overpass, located just east of the Hackensack River in the extreme northern end of Hudson County, and other incidental work, all in connection with the construction of the New Jersey Turnpike.

Principal items of work include:

Open Foundation Excavation	2,800 Cu. Yds.
Porous Fill	900 Cu. Yds.
Concrete	5,000 Cu. Yds.
Reinforcement Steel	305,000 Lbs.
Steel Piles	42,500 Lin. Ft.
Structural Steel	1,120,000 Lbs.
Metal Railing	875 Lin. Ft.

Contract documents may be seen, and may be inspected by prospective bidders during office hours, on and after July 28, 1950, at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey and at the office of The Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York, New York.

Contract documents will be furnished for $5.00 for each set, upon application to the Authority. The payment will not be refunded and contract documents are not required to be returned.

Proposals will be received at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey, until 10:30 o'clock in the morning and thereafter in the Veterans Room of the War Memorial Building at Willow Street, Trenton, New Jersey, until 11:00 A.M. (D.S.T.) on the following dates: Contract number 40 on August 8 and Contract number 56 on August 15, at which latter times and place said proposals will be publicly opened and read.

The receipt and opening of proposals is subject to proper prequalification of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority. Bidders must also submit with their proposal a revised financial statement and a statement of plan and equipment.

Proposals must be made upon the standard proposal forms in the manner designated in the Standard Specifications for Construction of the New Jersey Turnpike, and must be enclosed in sealed, special addressed envelopes bearing the name and address of the bidder and the number of the Contract on the outside, and must be accompanied by a certified check drawn to the order of the New Jersey Turnpike Authority and a proposal bond, each for not less than five (5) per cent of the amount of the proposal, but not less than $2,000.00 nor more than $200,000.00 and must be delivered at the above place on or before the hour named. Copies of the proposal form to be used for submitting proposals, of the form for proposal bond, of the form to be used for financial statement and plan and equipment statement to be submitted with proposal and special addressed envelope are furnished in detached form with the Contract documents.

The Contract will be awarded or proposals rejected within fifteen (15) days from the date of opening proposals. The right is reserved to reject any or all proposals.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast
Chairman

July 21, 1950

READ THE OFFICIAL
PROPOSAL COLUMNS OF
ENGINEERING NEWS-RECORD
THIS WEEK AND EVERY WEEK

SEARCHLIGHT SECTION

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)
$1.20 cents a line, minimum 4 lines. To figure advance payment count 5 average words as a line.
INDIVIDUAL EMPLOYMENT WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.00 a line an insertion.

INFORMATION.
BOX NUMBERS care publication New York, Chicago or San Francisco offices count as 1 line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED—RATE PER INCH:
The advertising rate is $11.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches —to a page. E.N.R.

NEW ADVERTISEMENTS received by August 7th at the New York Office 330 W. 42 St., N. Y. 18, will appear in August 17th issue subject to space available.

ESTIMATOR

Experienced ENGINEER, familiar with Oil Refinery design and capable of estimating process equipment from flow diagrams.

Give full information, experience record and salary expected.

ARTHUR G. McKEE & CO.
2300 CHESTER AVE.
CLEVELAND 1, OHIO

PROJECT ENGINEER

Wanted — Experienced Construction Engineer for large turbo-generator power plant on East Coast. Must have recent experience in directing operations for complete project, with knowledge of sub-aqueous operations and construction of docks and waterfront facilities. Write giving full particulars of education, experience and salary expected.

P-7108, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

ESTIMATOR or COST ENGINEER

wanted for work in Brazil Age 28 to 40. By North American Company which has been building hydro-electric projects in Brazil for past 50 years. First class engineering and construction organization with good opportunities for future. Salary to suit qualifications. In reply state experience and personal status in detail. Reply to

Dept. WHK
Canadian Brazilian Services, Ltd.
Yonge & Gerrard Sts.
Toronto, Ontario, Canada

WANTED:
Structural and Plate Steel Designer

Must have wide experience in both fields. Permanent position with moderate size plant in the Southwest. Write

P-7189, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

CITY OF DETROIT

Engineers experienced in the design and construction of water works needed for $75,000,000 project. Starting salary $4,067, $4,500, $5,500, $6,400 per year with annual increases. Submit resume of experience with application required.

Detroit Civil Service Commission
1501 Water Board Bldg.
735 Randolph Street, Detroit 26, Mich.

DISTRICT SALES ENGINEERS

Large mid-west manufacturer requires experienced men with proven sales records in earth moving equipment. Locations in south, eastern seaboard and mid-west. Submit complete data on education and experience. Excellent opportunity for top-rate men. Salary and commission. Our organization has been advised of this advertisement.

SW-7276, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

STEEL DETAILERS

MUST BE EXPERIENCED
SEND COMPLETE WRITTEN INFORMATION

FORT WAYNE STRUCTURAL STEEL COMPANY
4920 N. Clinton St. Fort Wayne 3, Ind.

REPLIES (Box No.) Address to office nearest you
NEW YORK: 330 W. 42nd St., 18
CHICAGO: 520 N. Michigan Ave., 11
SAN FRANCISCO: 68 Post St., 4

CIVIL SERVICE

CIVIL ENGINEER. Wanted to supervise construction of water purification plant. Send application and resume to Civil Service Board, 312 City Hall, Dallas 1, Texas.

DAM DESIGN and Construction. Engineer $5,775 to $8,400 a year responsible hydraulic engineer including in design or construction on major phases of dams plus college degree in civil engineering. Eligible for California civil engineering license. Applicants should be registered in home State. Apply on official form by Sept. 27, 1950. Write at once for details to State Personnel Board, Dept. C, 1015 L Street, Sacramento, California.

POSITIONS VACANT

CONSTRUCTION COMPANY, operating nationwide, specializing in structural concrete, such as bridge piers and their foundations and mass concrete such as dams, require A No. 1 thoroughly experienced estimator familiar with present-day costs capable of preparing complete, exhaustive and complete estimates. To be considered, complete information must be furnished. Our organization has been advised of this advertisement. P-6974, Engineering News-Record.

DESIGNING ENGINEER experienced in steel and concrete bridges and structures. Must be capable of assuming responsibility. Salary and bonus. Submit complete statement of record and experience. P-7161, Engineering News-Record.

ENGINEERS, EXPERIENCED in design of water and sewer systems, water and sewage treatment plants, industrial and commercial buildings to prepare plans or supervise construction. State salary desired, salary required and give references. Answer P-7277, Engineering News-Record.

WANTED: EXPERIENCED structural Designers, reinforced concrete and steel. Seelye, Stevenson & Value, 101 Park Avenue, New York, N. Y.

WANTED IMMEDIATELY

TWO EXPERIENCED CONCRETE DESIGNER — DETAILERS

WITH

HIGHWAY BRIDGE EXPERIENCE

Applicants should furnish experience record and references with salary required.

REPLY TO CHIEF ENGINEER
P. O. BOX 1850, JACKSON, MISSISSIPPI

SALARIED POSITIONS $3,500—$35,000

If you are considering a new connection communicate with the undersigned. We offer the original personal employment service (40 years recognized standing and reputation). The procedure, of highest ethical standards, is individualized to your personal requirements and develops overtures without initiative on your part. Your identity covered and present position protected. Send only name and address for details.

R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N. Y.

GET NEW JOB FAST

Who pin-job hopes on dull resumes that stand little chance of getting an interview? Send quick for 24-page booklet of letters, forms and examples. Made, outline plan to capture future, shows you what NOT to do. FREE: certified as famous Resume Job Letter Kit only $2. Mail to JOB MASTERS, Rm. 1814, 40 So. New York, N. Y. D.

POSITIONS VACANT

EXPANDING CONSTRUCTION and engineering company located in Northwestern Ohio specializing in the construction of sewage and water works plants has attractive opening for assistant to general contractor. Must have office and field experience with mechanical and heavy construction, and be capable of estimating and expediting projects. Full material given as to advancement, State salary desired and references. P-7270, Engineering News-Record.

WANTED: ESTIMATOR experienced with heavy and process General Construction work. Must be able to price industrial heavy construction work. Take-off man not wanted. Salary open. Buffalo area. Full particulars first letter. P-7323, Engineering News-Record.

WANTED—PROJECT Engineer. Graduate Licensed. Age 35-50. Experienced roll fill earth dam construction. Location South. Send full details education, experience, references and salary available. P-7326, Engineering News-Record.

PENNSYLVANIA COMPANY wants Superintendent for right construction. Must be college trained, preferably single. Give history and salary expected. P-7335, Engineering News-Record.

POSITIONS WANTED

CIVIL ENGINEER, registered P.E., N.Y. Thirty years executive experience on general construction, highways, airports, industrial developments, drainage, including fifteen years foreign assignments. Fluent Spanish. Retired over 65. U. S. Engineers. Would consider position as Resident Engineer or Research on fact Report and Estimates. Excellent recommendable credentials. Excellent Health. Presently located New York City. PW-6824, Engineering News-Record.

(Continued on opposite page)

POSITIONS WANTED
(Continued from opposite page)

PROJECT ENGINEER Civil, Mechanical, Electrical Background. Age 37. Design, Construction, Specifications, Estimating. Registered. Best References. PW-7195, Engineering News-Record.

GENERAL SUPERINTENDENT, 50, twenty-five years experience. Thoroughly experienced large scale multiple buildings, varied commercial, industrial and heavy construction. Graduate Eng'neer. Address PW-7145, Engineering News-Record.

PIPE SUPT. Approx. 20 yrs. experience on Oil Refinery and Powerhouse construction. Foreign and Domestic. 42 yrs. of age. Knowledge of Spanish. Have Passport and good references. Responsible, available immediately. P. O. Box 58, Vidor, Texas.

ESTIMATOR, can take-off, commercial, industrial, residential buildings, new and alterations—seeks position. Age 38. PW-7285, Engineering News-Record.

MASTER MECHANIC, Equipment Supt., Mechanical Operating Engineer, over twenty-five years experience with erection, repair and maintenance of heavy industrial, power house, pumping stations and marine equipment. Desires permanent position. PW-7231, Engineering News-Record.

ESTIMATOR-MANAGER-engineer, 14 years experience on heavy engineered construction, multi-residential, public, commercial & industrial building. Prefers position with contractor handling all types of heavy const. & bldg. const. In reply state salary to be expected PW-7298, Engineering News-Record.

STEEL SHARPENER, twelve years experience in all types drill steel and bits. Available August 1st, anywhere. PW-7299, Engineering News-Record.

ENGINEER, 39, licensed in NY State, MS in CE Univ. of Illinois, US Citizen, single, Bilingual. 14 years experience design of light & heavy structures, 2 yrs. in export field, desire employment in Near East. Available September. PW-7294, Engineering News-Record.

WE OFFER

GRADUATE ENGINEERS

Civil Mechanical Electrical

Chemical

Available for Duty in Latin America

U. S. Trained.
English and Spanish Speaking.

Adapted to Working and Living Conditions in Latin American Countries.

Please write to:

Institute of Engineers of Puerto Rico

Box 3392 San Juan, P. R.

When Writing Your Ad

Provide an indexing or subject word.
Write it as the first word of your ad.
If it is a Position Wanted or Position Vacant ad, make the first word the kind of position sought or offered.
This will assure proper classification in the column.
The right is reserved to reject, revise or properly classify all Want Advertisements.

Proper Classification increases the possibility of Prompt Returns

A COURSE OF INSTRUCTION BY MAIL IN

STRUCTURAL ENGINEERING

Fortieth Year

OUR COURSES HAVE HELPED THOUSANDS
to better positions and to pass State Board Examinations

- Complete Structural Engineering Course.
- Public Works Structures.
- Architectural Engineering.
- Special Course C (State Board Exams).
- Reinforced Concrete Engineering.
- Structural Steel Designing.

Monthly payments permissible. Information sent without obligation. WRITE TODAY

WILSON ENGINEERING CORPORATION

College House Offices • Harvard Square • Cambridge, Mass., U. S. A.

POSITIONS WANTED

CALIFORNIA REG. Civil Engineer with 14 years varied experience as field engineer, inspector, and resident engineer desires permanent connection with growing concern offering opportunities for advancement. Prefer position in Southern California. Not requiring travel. PW-7345, Engineering News-Record.

MUNICIPAL POSITION as engineer, director or superintendent. 19½ years diversified civil engineering. Land Surveying and underground engineering lines. Resume on request. Location immaterial. Available immediately. All inquiries answered. PW-7333, Engineering News-Record.

CONSTRUCTION OR Project Manager will be available after Sept. 1 for domestic or foreign assignment. Have had many years experience in heavy construction work, can furnish a complete experience organization for both office and field. PW-7344, Engineering News-Record.

SELLING OPPORTUNITY WANTED

SALES ACCOUNTS Wanted. Previous experience sales steel, building accessories, fencing, etc. Capable estimator, graduate civil engineer. P. O. Box 1441, Columbia, S. C.

WANTED YOUNG Company in the Construction Machinery business looking for connection as Factory Representative in Midwest working out of Detroit, Michigan. BA-7328, Engineering News-Record.

BUSINESS OPPORTUNITY

Partners Wanted—

5 or 10 partners. Are sitting within one half to two hours trucking time of $6,000,000 worth of work. Have plenty of material but need crushing plant. Wm. C. Davis, owner, Allied Granite Company, Box 847, Casa Grande, Arizona.

PATENT ATTORNEY

Patent Practice

before U. S. Patent Office. Validity and infringement investigations and opinions. Booklet and form "Evidence of Conception" forwarded upon request. Lancaster, Allwine & Rommel, Registered Patent Attorneys, suite 414, 815 15th Street, N. W., Washington 5, D. C.

ESTIMATING SERVICE

Any Trade and Type of Project

Literature and Sample on request

Construction Survey Cooperative

101 Park Ave., New York 17, N. Y.

MUrray Hill 5-7317 Founded 1922

SUBMERGED PIPE LINE CONSTRUCTION

BOYCE COMPANY

Phone 3-2530 Clearwater, Fla.

WANTED

Large engineering firm wishes to acquire several complete plants through purchase of (1) capital stock, (2) assets, (3) machinery and equipment, whole or in part. Personnel retained where possible, strictest confidence.

Box 1206
1474 Broadway New York 18, N. Y.

LEARN TO ESTIMATE

Today, more than ever before, you must know how to analyze building costs. If you want to become a successful builder, learn how to prepare a correct estimate in a hurry. Get in on the profitable work now available wherever you turn. Your success is assured if your estimates are right; otherwise you are licked before you start.

The Tamblyn System of Estimating will make a real estimator out of you in a few weeks of your spare time. We are so sure that you will want to learn it, that we will send you our complete home study course for ten days examination absolutely free. If you don't think it is the finest thing you ever saw, just return it and it won't cost you a cent. If you like it and want it, send us $8.75 when 10 days are up and $7.50 per month until $38.75 is paid.

This estimating system is based on forty years of actual construction experience. It has been sold all over the world for more than twenty years. Thousands of estimators and contractors swear by it. Our offer isn't hot air and big talk. We don't give you a diploma or a lapel button, but we do teach you down to earth estimating which will bring you profitable business.

Just send your name and address today, and we will mail you the complete course at once for your approval.

TAMBLYN SYSTEM

1115 So. Pearl St. E-441

Denver, Colo.

FOR SALE — FOR RE-ERECTION

Several one story heavy steel frame buildings with overhead cranes, wide spans, up to 100,000 sq. ft. or larger; match-marked for re-erection by us anywhere if desired.

Immediate Delivery

H. JAFFE

50 Church St., N. Y. 7, N. Y.

Phone Beekman 3-1175

SURVEYING INSTRUMENTS

USED • REBUILT • SALE • RENT • REPAIRING

U. S. AIR CORPS TYPE
NEW, SAFER, SHOCK RESISTANT

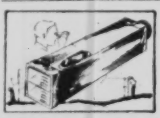
SUN GLASSES

Reduce Eyestrain From Glare & Harmful Rays

Cool green medium is curved. Reg. $10.00 Quality polished lens of rockalass with 2 gold plated frames, pearloid sweat bar and nose pads. Made to meet U. S. Govt. specifications. Complete with case.

$2.25 For 2 $4.00

P. Post Paid



MAKE QUICK ACCURATE SIGHTS

•

NEW IMPROVED HAND

SIGHTING LEVEL

COMP. WITH U.S. ARMY PLASTIC POUCH

Precision built, easy to use. Needed when laying drains, pipe lines, foundations, grading and determining depressions or elevations.

SPECIAL LOW PRICE $1.85

SHIP. CHG. 15c EXTRA EACH

BE SAFE—BE SURE ON LAND OR SEA

Brand New U. S. Navy

POCKET COMPASS

DEPENDABLE ACCURATE

Has Many Features Not Found in Compasses Many Times This Price.

A fine precision compass designed for hard usage. Has water tight Stainless metal case and luminous dial marked 0 to 360 degrees. Guaranteed.

Regular $10.00 Value $3.00

P. POST PAID

J. JACOB SHANNON & CO.
214 N. 22nd St. Phila. 3, Pa.
The Oldest Equipment House in Phila.

INSTRUMENT REPAIR BY CRAFTSMEN

Our craftsmen have a completely equipped department fully able to accommodate the repair of all makes of transits, levels and measuring tape. Work includes thorough overhaul, cleaning, oiling and adjustment.

Precision work guaranteed.

DAVID WHITE COMPANY
317 W. Court St., Milwaukee 12, Wis.

INSTRUMENTS FOR RENT

We rent transits and levels on a monthly or yearly basis. Reasonable rates. All instruments are fully guaranteed in first class working order.

DAVID WHITE COMPANY
317 W. Court St. • Milwaukee 12, Wis.

GURLEY

SURVEYING INSTRUMENTS

NEW • REBUILT

Replace your platinum wire or spider web reticle with the new Gurley glass reticle. Metallic filaments deposited on Gurley glass reticles are sharply defined—equally visible against either very bright or dark backgrounds.

Patterns to suit every surveying need.

W. & L. E. GURLEY
Union Plaza Troy, N. Y.

TRANSITS AND LEVELS

New or Rebuilt
Sale or Rent

Headquarters for REPAIRS — any make — Factory Service. We will also buy your old instruments or take them in trade. A complete line of Engineering Instruments and Equipment for field or office. Write for catalog N.R. 08

WARREN-KNIGHT CO.
Manufacturers of Sterling Transits and Levels
136 No. 12th St., Philadelphia 7, Penna.

TRANSITS and LEVELS

Immediate delivery on expertly rebuilt, well-known makes. All makes of instruments repaired. Work guaranteed

Write for used instrument list today

J. H. WEIL & CO.
1325 CHERRY ST. PHILADELPHIA, PA.
GURLEY REPRESENTATIVES

QUALITY REPAIRS

by the makers of the
WORLD'S QUALITY SURVEYING INSTRUMENTS
Since 1871
C. L. BERGER & SONS, INC.
37 Williams Street, Boston 19, Mass.

TRANSITS - LEVELS

All Makes Repaired - Rebuilt - Parts - Sold - Rented - New or Used

CIRCULAR GRADUATING at New Higher Accuracies is Now Available — quickly, Economically — with our new circular graduating engine. Ask for Prices.

ALL WORK GUARANTEED
BRUNSON INSTRUMENT CO., INC.
1405 Walnut St., Kansas City 6, Mo.

LASTING BRUNSON ACCURACY

FROM STOCK

Brand New & Rebuilt

TRANSITS & LEVELS

Fully equipped modern shop—all makes and models repaired — all work guaranteed — instruments rented

Midwest Representative: W. & L. E. Gurley

NATIONAL BLUE PRINT CO.
Established 1914
210 S. Canal St. Chicago (6), Ill.

IF THERE IS

Anything you want

that other readers of this paper can supply

OR—

Something you don't want

That other readers can use, advertise it in the

SEARCHLIGHT SECTION

RE-BUILT REPAIR RENT EAL EXPERTS

BUFF

ALL MAKES

69 Dey St., New York

SPECIALIZED REBUILDING

of surveying and engineering instruments.
All makes and models expertly repaired in modern shop. All work guaranteed.

USED REBUILT INSTRUMENTS
for sale or rent

ROY D. HICKERSON
46 JOHNSON AVE. INDIANAPOLIS 19, IND.

L.B.SMITH INC.

OFFERS

AIR COMPRESSORS

Ingersoll-Rand 105 cubic foot, Waukesha gasoline power, on two rubber tires.
Gardner-Denver 105 cubic foot with air receiver, hose reel, driven by power take-off and mounted on 1941 Ford.
Gardner-Denver air-cooled 105 cubic foot with air receiver, V-belt drive from power take-off and mounted on 1942 Ford chassis with Wood two-yard dump body.
LeRoi 2-stage 105 cubic foot air-cooled, skid mounted, built-in tool boxes, hose reels and hose.
Gardner-Denver two-stage 160 cubic foot skid mounted.
Schramm 210 cubic foot with International UD14 diesel on steel wheels.
Worthington 210 cubic foot, two-stage, air-cooled, on steel wheels with Hercules diesel.
Gardner-Denver 315 cubic foot two-stage, skid mounted, Murphy four-cylinder diesel.
Pennsylvania 12"" x 10"" class 3A single cylinder, 355 cubic foot P.D., flat belt driven 50 HP slip ring motor.
Worthington two-stage, water-cooled, vertical 250㎥, 60 CFM, new condition.

QUARRY EQUIPMENT & BINS

Cedarapids BBB 1036 Scalper.
10 x 20 Beaumont jaw crusher.
10 x 7 Allis Chalmers Blake type jaw crusher.
Cedarapids No. 1 Kubit.
60 ton 2 compartment storage bin with clam shell gates.
New 16 x 16 double clamshell gates.
20"" x 6'6"" Belt Type Magnetic Separator.
Conveyors—18""—24""—30""—36"".
2—4' x 12' Tyler F600 screens.
Cedarapids portable screening plant.

TRUCKS—TRAILERS

1½-ton Ford & Chevrolet.
2½-ton GMC, New and rebuilt.
Sterling COE Model 255GCS tandem drive tractor 9.00x24 tires, 200 HP Cummins supercharged diesel, complete with 40-ton Rogers low bed equipment trailer, 16—7.50x20 tires airbrakes, outriggers, excellent condition.
2,000 gallon tanks on semi-trailer mounting.
New and rebuilt dump bodies.
6x6 7½-ton Reo.

GENERATORS & LIGHT PLANTS

1½ KW to 125 KW, alternating and direct current, gasoline and diesel powered.

GASOLINE AND DIESEL ENGINES

New JXD Hercules Gasoline.
Buda, Hercules, Hill diesels, rebuilt.
New and rebuilt Murphy diesels.
GM 6 and 12 cylinder diesels, practically new.

SHOVELS—CRANES

Lorain 75B Cummins supercharged diesel powered shovel & crane.
Lorain 75B, 1¼-yd. shovel, gas power
Marion 25-ton diesel powered heavy duty truck crane on heavily reinforced Mack.
P&H Model 625A 15-ton crawler crane.
Brownhoist 1-yd. gas shovel and crane.
Lorain 30 combination ½-yd. shovel, hoe & clam.
Universal truck crane.

SHOVEL & CRANE ATTACHMENTS

Lorain 75B-77 1½-yd shovel attachment rebuilt.
P&H 203 shovel attachment.
Chain crowd Lorain 30A shovel attachment.
Lorain 40 Hi-Lift shovel attachment.
Bucyrus-Erie 30B tunnel front attachment.
Koehring 301 dragline fairlead.
50' crane-clam boom, 1¼ or 1½-yd.
Lorain 75 fairlead.

Backhoe Buckets & Attachments

¾-yd Lorain, 40, LBS ㎥6105, 44"" cutting width, teeth, sheave.
27"" outside width drop bottom type LBS ㎥1033, good condition.
26"" outside width solid bottom type LBS ㎥4377, good condition.
¾-yd Amsco 40"" cutting width, LBS ㎥8101.

CLAM—DRAG—SCRAPER BUCKETS

NEW TAGLINES

McCaffrey Model 648 for 1¼ to 2-yd crane.
McCaffrey Model 636 for ¾-yd to 1-yd crane.

SHOVEL DIPPERS

Lorain 41, ¾-yd. LBS ㎥7403, rebuilt.
New Lima 1-yd, Amsco, LBS ㎥2295.
Bucyrus-Erie 1¼-yd-gas air, LBS ㎥3782, fair.
Lorain 75 manganese 1¼-yd, LBS ㎥7233, teeth and bail.
Lorain 75B, 1¼-yd extended lip, 1¾-yd LBS ㎥2260.
Pettibone-Mulliken 2-yd Lorain 82 or 820, manganese, LBS ㎥5361.
Pettibone-Mulliken 2-yd for 3500 Manitowoc LBS ㎥5763.

CONCRETE ROAD BUILDING & MISCELLANEOUS CONCRETE HANDLING EQUIPMENT

Pavers & Mixers

27E Koehring Paver.

Concrete Finishers

Jaeger type "L" double screed, 10½'-12½', rebuilt.
Heltzel 10'-12' finisher, rebuilt.
Blaw-Knox gas-electric 10½'-12½', rebuilt.
2 Koehring 10'-12', rebuilt.

Concrete Road Forms

830'—Truscon 7""x8"" forms, with stakes.
1380'—Heltzel 7""x8"" forms, with stakes.
4050'—Heltzel 9""x8"" forms with stakes.
1430'—Heltzel 10""x8"" forms, with stakes.
1010'—Blaw-Knox 10""x8"" forms, with stakes.

Fine Grade Machines

Flynn surgrader 10'-12', rebuilt.
R.B. Fine Grader for 21' width, rebuilt.

Form Graders—2 of each

Cleveland formgrader, new condition.
Carr formgrader, new 1944, rebuilt.

Barber-Greene 44C Trenching Machine

ROLLERS

Hercules 9-11 ton, three-wheel.
Buffalo-Springfield 10-ton, three-wheel.

GRADERS

New Warco D76 tandem driven grader, 12' blade, V-type scarifier, 13.00x24 tires all around, 24,500 lbs., International UD14A diesel engine.

TRACTORS

FD Cletrac crawler tractor, Buckeye bulldozer & double drum power control unit, DHXB Hercules diesel engine. Rebuilt, immediate delivery.

International TD-9 with Bucyrus Erie angle-dozer.

Minn-Moline UTI wheel type, gas powered with Lull front end shovel loader.

Phone HARRISBURG, PA. 7-3431

LASTING • BONAFIDE • SERVICE — L.B. SMITH, INC.

L.B.SMITH INC. CAMP HILL, PA. SUBURB OF HARRISBURG

WE OWN THE EQUIPMENT WE ADVERTISE

• STRUCTURAL STEEL SHAPES •

New and Used—Immediate Delivery

At present our inventory of steel shapes and forms includes a full line of both new and used steel especially for heavy construction work. 4" I beam to 36" Girder Beam. 14" Columns 287#/398#

BEARING PILE SECTION

Stock list on request. Write, wire or phone.

HY DRACHMAN STEEL CORPORATION

Warehouse
14-23 34th Ave., Astoria L. I., N. Y.
Astoria 8-8023; 8-4484-5

Sales Office
563 E. Tremont Ave., New York City, N. Y.
Cypress 9-5440-1

FOR SALE

Lorain 820 Shovel #15135—1948
Marion 362 Drage 1½ yds. Excellent
Buckeye Model 70 ¾ yd. Shovel 1947
Osgood ½ cu. yd. Crane 3175 Good Condition
Northwest Crane Model 104 Bargain
Cat D W 10 Tractor W/Laplante
Choate Scraper
Cat #12 Grader Late Model
Warco Motor Grader U D 14 Diesel
Cat Tractor with Laplante, Choate Blade 2 U 3936
Allis Chalmers H D 19 with Garwood Straight Blade #173
Garwood Scraper 17 yd. Model S 152 #7076
Bucyrus Erie Scraper 19 yd. Model 515
Parsons Model 310 Trenchliner Diesel
Cleveland Model 110 Wheeltype Late Model
Cleveland 95 Wheeltype Reasonable

A. C. R. COMPANY
19615 Nottingham Road
Cleveland, Ohio
Kenmore 1-8000

U. S. ARMY **5 GAL. JEEP CANS**

COMP. WITH NEW 15" DETACHABLE FLEXIBLE SPOUT

A rugged can for fuel and oil storage for field equipment. Can is used but in good condition. Spout is new with breather rod and breather tube.

$1.50 Each
P. Post 75¢ within 300 miles of Phila.

$1.25 Each $12.00 a Dozen
F.O.B. Phila.

Rated Firms Open Account—Others Send Check

J. JACOB SHANNON & CO.
214 N. 22nd St., Phila. 3, Pa.
The Oldest Equipment House in Philadelphia

SHOVELS & CRANES

1—Northwest Model 78D—2 yd. diesel shovel
2—Northwest Model 6—shovel and crane
2—Northwest Model 25—crawler crane, shovel, Pullshovel
1—Lorain 2 yd. diesel shovel

HODGE & HAMMOND, INC.
1100 E. 156 St., New York 59, N. Y.

FOR SALE OR RENT

ALL LATE MODELS

1—N.W. Shovel, 2½ c.y. Model 80 D
1—N.W. Shovel, 1½ c.y. Model 6
1—N.W. Shovel ¾ c.y. Model 25
Optional as Crane or Backhoe
1—Caterpillar D 8 Angledozer
1—Caterpillar D 7 Bulldozer

WILLIAMS CONSTRUCTION CO.
Box 145 Middle River Baltimore 20, Md.
Phone—Essex 1310

FOR SALE

3—Euclid Dump Trucks
1949 Model 27FD End Dump.
9.7 Cu. Yd. Struck.
Pay Load 30000#.
1—Towermobile with 45' Tower.
1941 Ford V8 Motor.

FRAZER-DAVIS CONSTRUCTION COMPANY
1319 Macklind Ave. St. Louis 10, Mo.

FOR SALE

ROGERS—20 Ton Tag-a-Long Trailer*
MARLOW—6" Self-priming pump*
HAISS—¾ yard clamshell bucket*
RANSOME—3½-S tilting mixer*.
JOY-SULLIVAN—315 cu. ft. Diesel Compressor and Wagon Drill
DIAMOND—Gravel plant*

*Above equipment new and will be sold at less than present day prices.

CLARK-WILCOX COMPANY
118 Western Ave. Boston 34, Mass.

FOR SALE

Five (5) Model 27FDT End Dump Euclids with Cummins Diesel engines—in good working condition. $7,700.00 Each if purchased as a group—Cash.

Also all other types of construction equipment including new and used Shovel-Dragline Combinations from ¾ to 6 cu. yd.

S. J. GROVES & SONS COMPANY
P. O. BOX 7 PH: 375 Johnsonburg, Penna.

FOR SALE

BUCKETS

Distributors for Pettibone Mulliken Corp.
1—Lorain 40A Truck Crane 10 wheel
1—10 Ton D.E. Crane 50 ft. span A. C. current

VAN HOUTEN MACHINERY CO.
908 Van Houten Ave. Clifton, N. J.

FOR SALE CHEAP

2—New D-13000 Caterpillar Diesel Engines 150 H.P. Complete with Clutches and Pulley-drives.
1—Schramm Diesel 315 cu. ft. 2 stage comp. 1947.
1—LeRoi Diesel 315 cu. ft. 2 stage comp. 1946.
1—25-ton Davenport diesel Loco. std. gauge new 1947.
1—50 ton Porter Loco. 0-6-0 Std. gauge.

HARRY C. LEWIS
899 East Grand Street Elizabeth, N. J.

New Guaranteed . . . 60 TON
HYDRAULIC JACKS
Navy Surplus
ILLUSTRATED CATALOG 60% off
BERKELEY DISTRIBUTORS INC.
16 JOHNSON AVE HACKENSACK N J

LOCOMOTIVE CRANE

McMyler Interstate Type "B" 23-ton Steam Locomotive Crane, 50' boom, Serial #3292, 8-wheel, standard gauge. Now working. Price —$2,500.

FURNIVAL MACHINERY CO.
54th & Lancaster Ave., Phila. 31, Pa.

FOR SALE

Reliance Crushing Plant

15" x 10" Crusher—38" Bucket Elevator
50" x 12" Roller Screen—100 Ton Capacity Bin
2 Gaso. Engine Power Units

ABERTHAW COMPANY
133 Southampton St. Boston 18, Mass.

FOR SALE

1—Barber - Greene Model 44-C Ditcher. Digs 5½' x 18" wide.
1—Lorain Model 40 Pullshovel.

CONTRACTORS MACHINERY CO.
333 MIDLAND, DETROIT, MICH.

For Sale or Rent with Option to Buy
Cat D-7 Hydraulic Bulldozer
Lorain 80, Diesel Shovel, 1¼ yd.
Cat D-6 with Link Belt Crane
Cat D-4, Hydraulic Bulldozer and Winch
Insley 1½ yd. Truck Crane
Trade-in and financing considered

BENDIX MACHINERY CO. INC.
401 Broadway New York 13
Tel. Canal 6-5693

FOR SALE

1—Northwest Model 41 Shovel Attachment 1 C.Y. Yard Complete

GARGARO COMPANY, Contractors
40 E. Seven Mile Rd., Detroit 3, Michigan

FOR SALE

Two (2) Model 80-D Northwest Crane-Shovel-Draglines.
Four (4) Allis-Chalmers H.D.-19 Tractors.
Four (4) 27FD Euclid End Dump Units.
Ten (10) 13FDT Euclid Bottom Dump Units.
One (1) Rex Dual Drum 34-E Paver.
One (1) Letourneau Model "W" Scraper.

FEHRS TRACTOR & EQUIPMENT CO.
1809-11 Cuming St. Omaha 2, Neb.

ROAD & CURB FORMS
Blaw-Knox 8000 ft. 9"x5".
Blaw-Knox 10000 ft. 6"x8". NEW.
3000' Metaform Curb Forms 13½" hi, 0°.

ROAD ROLLERS
B-S 10 ton 3 wheel VM-3T.
B-S tandem 3 axle 10-14 tons.
Hercules 1 wheel 10 tons.

GRADERS—CONCRETE MIXERS
1 Yd. 56-S Smith Tilting Mixers, left hand.
2 Yd 56-S Smith Mod T. Tilting Mixer.
2 Yd. C.M.C. 56-S Building Mixer. 2 Yd.
2 Yd. Ransome 56-S Builders Mixer, Elec.
28-S Ransome Builders Mixer, Elec.
Cat. Model 112 Motor Grader.
Austin-Western Model 99-M Auto Patrol Diesel.
Koehring Model 34-E Twin Batch Paver.
Ransome 34-E Dual Drum Paver. Diesel Power.

CONCRETE PLANTS AND STORAGE BINS
Johnson 4 Compt. agg. 2 cement. 4 yd. batcher, 868 bbls. cement silo semi-auto controls, etc.
Butler cement bin 105 bbls. Complete.
Aggregate bin 105 tons 3 compts. No batcher.
B-K Ag. bin 3 compt 102 ton weight batcher.
168 tons aggregate bin 3 compt. with 4 yd. weigh-batcher and scales, excellent.

ASPHALT PLANTS
Masden 1000 # cap. Complete.
Barber-Greene 850-840 Hot Mix.
Barber-Greene Model 848 "Travel Plant".
Barber-Greene 842 Portable Utility Plant. Complete.

EUCLID TRUCKS ATHEY WAGONS
1 Euclid Model 49-FD rear dump.
6 Euclid Model 27FD. Rear Dump.
1 Cat. DW10 Tractors Athey PD10 trailers.
3 Athey FB: two EB 2 way dump wagons.

PUMPCRETES
REX 160-180-190-200 with fittings.

SHOVELS—CRANES—DRAGLINES
Marion Mod 111 M Diesel Hi Lift Shovel.
Marion Mod 362 1½ Yd. Shovel, Crane, Dragline.
Koehring 803 Diesel Crane 2 yd. 100' bm.
Koehring 304 Diesel ¾ Yd Shovel, Crane, Backhoe.
Lorain 80 1½ yd Diesel Shovel. New 1948.
Lima 604 1½ yd. Diesel Shovel. Practically new.
Lima 604 Diesel Crane, new 1948. 100' bm.
P&H 655-B Diesel Shovel. New 1947.
P&H 855B Diesel Shovel 2 yds.
P&H 255A Diesel Shovel-Crane 1948.
Lorain 40 Comb. Complete. ¾ yd.
Lima 1201 High Lift Diesel Shovel.
Lima 1201 Dragline with 100 ft. boom.
Northwest 80D 2½ yd. Diesel Shovel 1946.
Northwest Model 3 Diesel Shovel 1½ Yd. New 1946.

CONCRETE BOTTOM DUMP BUCKETS
2 Blaw-Knox 1 yd air controlled.
6 Blaw-Knox 1 yd Roller gate.
2 Grabo 1 yd controllable clamshell gate.

TRENCHERS
Barber-Greene Model 14C.
Parsons Model 200 wheel type approx. 2 yrs. old.
Buckeye Model 11, reel type.
Cleveland Trencher Model 95.

STIFF LEG AND GUY DERRICKS
Steel 35 ton stiff leg derrick 100 ft. bm.
American 20 ton stiff leg 90 ft. bm.
American 15 ton stiff leg 65' boom.
Stiff leg derrick 15 tons 100 ft. boom.
American 20 ton Guy derrick 100 ft. boom.
Lambert guy derrick 20 ton 100 ft. boom.
Railroad 50 ton derrick car. Bridge construction.

RICHARD P. WALSH CO.
30 Church St. New York 7, N. Y.
Cable RICHWALSH Cortlandt 7-0723-4

When you see equipment listed in an E.C.A. advertisement you know that *we own it outright* and you can see it at an E.C.A. show room.

CRAWLER CRANES, DRAGLINES AND SHOVELS
1 2¼ yd. Mdl. K67e Link Belt Diesel Crawler Crane #2203, with 50-65-ton 55' boom and 175' nh high gantry, hydraulic controls, friction engine. Will handle 42½ ton. Weight 144,000 #.
1 1 yd Link Belt Model K120, Ser. No. 2047, equipped with 70' boom, powered by Cat. D-9000 Diesel engine.
1 1¼ yd. Lorain Model 40, Ser. No. 36750, with 70' boom, powered by Waukesha Hesselman diesel engine.
1 1½ yd. P&H Model 655 A, combination shovel, dragline and crane. Ser. #425, powered by Cummins Diesel, 110,000 lb. diesel engine. Crane boom 25', shovel front 24' boom, 18' sticks, 6½ yd. manganese dipper.
1 1½ yd. Link Belt Model K300, Ser. No. 1903, powered by Caterpillar 180,000 diesel engine with 65' boom. A-frame back hoe attachment, boom 25' scrap arm 8-9", full shovel mast to crowd 14½ yd. dipper.
1 1½ yd. Buckeye Erie, Mdl. 80B, Ser. #16602, gas powered with 50' boom.
1 1¼ yd. 25 Northwest Ser. No. 4364, Powered with 6 cyl. Waukesha Model 1084 gasoline engine. With 60' boom.
1 1¼ yd Link Belt Model K58 crawler crane, Ser. No. 1320. Powered with 4 cyl. Model WL-51 Waukesha gasoline engine with 50' boom.
1 1 yd. Erie Gas Air Model GA 2 combination shovel and crane, Ser. No. 10079, powered with 4 cyl. Waukesha Model WL-51 gasoline engine, with 45' crane boom. Shovel boom 22', sticks 12' with 1 yd. dipper.
1 ¾ yd. Koehring Model 501, Ser. No. 84. Powered by 4 cyl. Wisconsin Model M gasoline engine with 40' boom.
1 ¾ yd. Bucyrus Erie Mdl. 10B, Ser. #11494, gas powered with 28' boom, ¾ yd. dragline bucket.

WE OWN 15 CRANES NOT SHOWN ON THIS LIST. SEVERAL CRANES LISTED ARE IN OUR RENTAL DEPT. ONLY.

TRENCHERS
Buckeye Model 12, Serial # 12-12, powered by 6 cyl. Buda gas engine, Model HF-226, wheel type. Will cut 24" wide, 54" deep, all mounted on crawlers.

Parsons Model 200 trencher, Serial # 3774, powered by 6 cyl. Waukesha gas engine, Serial # 6BZ-124-6618, wheel type. Will cut 21" wide, 72" deep, all mounted on crawlers.

BOTH LATE MODEL MACHINES REBUILT

AIR COMPRESSORS
Portable and stationary, electric diesel & gasoline power, sizes from 2 cu. ft., 1,000 cu. ft.

CAR PULLERS
2 Stephen Mattson car pullers, size 0SX & 14H. Both 10 H.P. 1—1,000# L.P. 1—2,000 # L.P.

TRUCK CRANE
½ yd. Universal Crane #873, with 25' boom, mtd. on 10 wheel Bethlehem 20ton, steel tracks.

LOCOMOTIVE
1—15 ton Vulcan std. ga. locomotive. Ser. No. 1001. With special MCB couplings. Powered by 6 cyl. Ethyl Model MES gasoline engine. Equipped with 3 wheel air operated brakes with 2 cyl. Westinghouse air compressor. Complete with starter and generator.

PUMPCRETE
1—Rex Mdl. 180 single bag #C1144, gas powered, with revolving hopper. Cap. 25 to 30 cu. yds. per hr. Max. vert. lift 110'.

Partial List Only—Send for Stock List—We Buy, Sell and Rent

CLIFTON HEIGHTS, PA. MA dison 6-2200 | 1155 So. Washtenaw Ave. CHICAGO 12, ILL. Phone NE vada 8-2400
30-J Church St. NEW YORK 7, N. Y. Phone Worth 2-0036 | P.O. Box 933-F PITTSBURGH 30, PA. Phone Federal 1-2000

EQUIPMENT CORPORATION of AMERICA

FOR SALE
25 ton American Gas Locomotive Crane
40 ton Orton Diesel Locomotive Crane
30 ton Davenport Diesel Locomotive
50 ton Whitcomb Diesel-Elec. Loco.
2½ yd. Bucyrus 54B diesel shovel-dragline
2 yd. Lorain 820 diesel cranes new 1948
20 yd. Koppel air dump cars. Std. ga.
1300 ft. I-R 2 stage elec. air compressors
150 HP Kewanee portable boilers

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St. St. Louis 1, Mo.

NEW and REBUILT
STORAGE BATTERY
LOCOMOTIVES
1½ to 10 Ton — 18" to 56" Track Gauge
GREENSBURG MACHINE CO.
Greensburg, Penna.

Pile Driving Equipment

Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
Pile Driving Accessories
Drop Pile Hammers and Caps
Steel Sheet Piling

CONTRACTORS MACHINERY Co.
2637 Southwest Blvd. Kansas City 8, Mo.
Phone Valentine 4240

Scoopmobiles & Buggymobiles
NEW & USED
For Sale or Rent
HODGE & HAMMOND, INC.
1100 E. 156th Street, New York 59, N. Y.

FOR SALE
LOCOMOTIVES
1—Brookville — 8 ton Gas — Std. Ga — New 1943.
Brookville—10 Ton Diesel—36" GA—Used 900 Hrs.
1—G.E.—70 ton Diesel-Elec. 4-Motor—35000 # T.E.—13199. New Nov. 1941.

COMPRESSORS
CHI—PNEU. PM-3 Two Stage—445 C.F.M. 75 H.P. 3-60-220-440. New 1942. #43982.

DERRICKS
1—American 20 ton Stiff Leg—135' boom—complete with American 250 H.P. 3 Drum Gas Hoist with Swinger. NEW.
2—LIDGERWOOD GUY 20 TON—115' MAST—100' BOOM—WITH OR WITHOUT 80 HP. ELEC. HOISTS.

MISCELLANEOUS
HYSTAWAY ATTACHMENT FOR CAT D-8. ALMOST NEW
Dewalt GEV 2½ HP saw #54098. Almost New.
C.P. Impact wrench, Model 575RS.
1—Weston 20 yard—Arc Dump.
2—Mc & T Hammer #3561. Almost New.
Union #6 Sheeting Hammer, #2628.
2—Orton 30 ton Diesel Loco. Cranes. New 1943.
Orton 25 ton Diesel Locomotive Crane. Late model.

R. H. BOYER
2005-13 W. Bellevue St., Phila. 40, Pa.
Phone Sagamore 2-7132

VULCAN
PILE HAMMERS AND EXTRACTORS
NEW OR FACTORY REBUILT
FOR SALE • • • FOR RENT
327 N. BELL AVE., CHICAGO, ILL.

DEPENDABLE USED MACHINES
Special—C.H. & E. 6-in. self-priming centrifugal pump, like new

Morris 10" gravel pump
RD-7 with bulldozer
Badger 36x20 roll crusher
Iowa 9x16 crusher
Eagle bucket loader
Int. H-4 with Hough loader
Backhoe attachment for Osgood 200
Silent Hoist Krane Krawler
Progressive 6x16 d.d. screen
Waukesha Model 6MZR power unit
Bay City ¾ yd. dragline
Byers ¾ yd. dragline
Universal ½ yd. hoe
Unit ½ yd. dragline
Universal truck crane

For rent—cranes, draglines, backhoes and all accessories.

10002 S. Ridgeland Ave. TRACTOR & EQUIPMENT CO. Oak Lawn, Ill.

FOR RENT

20-10 TON TO 25 TON CAPACITY

TRUCK CRANES

SECTIONAL BOOM LENGTHS TO 130 FEET

LIMA & P & H CRAWLER CRANES

30 TON TO 50 TON CAPACITY

SECTIONAL BOOM LENGTHS TO 175 FEET

THE ROGER SHERMAN TRANSFER CO.
EAST HARTFORD, CONN.

Branches: SPRINGFIELD, MASS. NEW HAVEN, CONN. ALBANY, N. Y.

For Rent

SPEEDCRANES

LATE MODELS

Manitowoc Diesel Powered Speedcranes for rent. 25, 40 and 60 ton capacities with booms 100' or more, 20' and 30' jibs. Special price on long rentals.

FORSYTHE EQUIPMENT CO., INC.
37-11 Vernon Blvd. Long Island City, New York
Tel. STillwell 4-1030

FOR RENT

2—SUPER C TOURNAPULLS

LEONARD
Spring Lake, N. J. 2-7245

BRAND NEW

FACTORY **Surplus SALE!**

PORTABLE MULTI-USE POWER SAW

SAVE $300
WAS ~~$488.00~~
NOW $188.00
FOB MINNEAPOLIS, MINNESOTA

CUTS WOOD
CUTS BRICK
CUTS CONCRETE
CUTS METAL

America's greatest saw bargain! Cuts lumber to 4" thick. Briggs & Stratton 3½ H.P. gas engine. Saw cuts flue lining, transite pipes, steel sheets, copper & aluminum, etc. Does work of $1,000 worth of saw equipment. Sharpens tools. Famous make, brand new, original crates. Limited supply. Send for literature. DEPT. EN8.

Ad. 1281
ENNIS SUPPLY CO.
534 1st St. N., Minneapolis 1, Minn., U.S.A.

FOR SALE

1—Concrete Plant, complete
1—1¼ cu. yd Osgood Combination Shovel-Dragline
1—½ cu. yd Osgood Dragline
1—⅜ cu. yd Bantam Crane
4—D-7 Caterpillar Tractors with Bulldozers
1—12 yd. LeTourneau Scraper
1—8 yd. LeTourneau Scraper
1—Austin Roller
2—½ cu. yd Jaeger Concrete Mixers
1—Rex Pumpcrete with pipe

This equipment is in excellent condition and is priced to sell.

Ellard Contracting Co., Inc.
P. O. Box 6705, BIRMINGHAM 10, ALA.
Tel: 59-5426

CONCRETE PAVER

Foote Model 34E single drum paver, standard 35 ft. boom and bucket. Gas engine. Serial 49262. Never used. Central Ohio location. $17,000.00.

I-BEAMS

200 pieces 12" x 31.8 LB.—18 ft.-19 ft. long
30 pieces 10" x 25.4 LB.—18 ft.-19 ft. long
Material has been used but in excellent condition for re-use. Central Ohio location.

FS-2234, Engineering News-Record
330 N. Michigan Ave., Chicago 11, Ill.

FOR SALE

27E Ransome Paver

full caterpillars with boom and bucket

ABERTHAW COMPANY
133 Southampton St. Boston 18, Mass.
Phone Highlands 5-6700

Browning 15-ton truck crane
Browning 25-ton steam locomotive crane
Lohse 5-ton tractor crane

HOISTING MACHINERY CO.
50 Church Street New York 7, N. Y.

FOR SALE

5 Cy Concrete Hopper Car

Standard railway gauge—air operated bottom dump gate—new in April 1950—never used. Bargain.

E. J. ALBRECHT COMPANY
2626 W. 26th Street Chicago

FOR SALE — COPPER CABLE

31,000' 2 0 Medium Hard Drawn 7 Strand New Bare Copper Wire (on reels.)

GLAZER STEEL CORPORATION
Knoxville, Tennessee
Phone—4-8601

LIMA 1201 Dragline

Diesel powered and equipped with 100-foot boom and 3½ yard Hendrix Bucket. Although three years old, machine has had little use and is in excellent condition. Location, Michigan.

W. J. MEAGHER & SONS
24th & Water Sts. Bay City, Michigan
Phone 9811

---

(1) 2½ cu. yd. Marion Shovel, Model 93M.
(1) 2 cu. yd. P & H Shovel, Model 760.
(1) 1¾ cu. yd. Lorain Shovel, Model 80.
(1) 2 cu. yd. Lorain Shovel, Model 820.
(1) 27E Rex Paver, Model 6SRK129A.

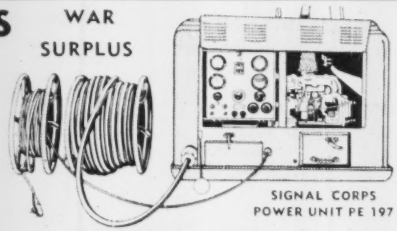
Subject to prior sale

J. H. BEERS, INC.
R. F. D. #2 *Phone: Bangor 307* Bangor, Pa.

LIGHT PLANTS

Brand New!

WAR SURPLUS



SIGNAL CORPS
POWER UNIT PE 197

115 volt 60 cycle A.C. single phase 1 K.W. Hi-hat, water cooled, 4 H.P. 4 cylinder Hercules Engine. Remote Control, complete panel board with instruments, 150 ft. automatic remote control cable with reel, 150 feet 2/8 brass clad wire with reel, housed in metal case with replacement parts and tool. Cable with reels alone worth $100. Regular price $600. Special price of unit $500. Shipping wt. 1200 lbs. Our price, complete $475.00 f.o.b. Chicago

Also 2½ K.W. power plant $295.00

WRITE FOR ILLUSTRATED FOLDER

WELLWORTH TRADING CO.
1831 S. State St. DEPT. ENR-4 Chicago 16, Ill.

FOR SALE

1—149' 6" Used Archer Tower
3—W. B. Double Well Hoisting Tower
1—Concrete Apparatus (Bucket & Hopper)

Now erected and available

L. H. LUDWIG & COMPANY, INC.
Falconer, New York

BUCYRUS-ERIE FOR SALE

BUCYRUS-ERIE -200-B electric shovel, mounted on Caterpillars. 10 cu. yd. bucket; shovel in excellent condition, has been used loading coal in strip mine. Reason for sale, we have installed 17 cu. yd. Bucyrus-Erie 550-B. Specifications and photographs sent on request.

NORTHWESTERN IMPROVEMENT CO.
Colstrip, Montana

DRAGLINE: Monighan 165' boom, 12 yd. bucket, diesel power, condition like new.
SHOVELS: Bucyrus Erie 120-B electric, 4 yd. capacity. Marion 3161, electric, 5 yd. capacity. P & H model 655-B, 1½ yd. capacity, D13000 caterpillar motor, used less than 1700 hours, condition like NEW.
TRUCKS: Euclid model-T, end dump, rock bodies, 22 ton cap., 275 H.P. Cummins motors.
LIMA 802 Shovel Attachments only, cond. like New.
DERRICKS: 1-75 ton Stiff Leg, 100 ft. boom. 1-35 Ton Guy, 88 ft. boom, 98 ft. mast.
DRYER or KILN: Allis Chalmers 10 ft. x 90 ft., heavy duty. Located Minnesota.
JAW CRUSHERS: Farrel 15-B, size 24 x 36", manganese fitted, with or without motor and drive. Pioneer 24 x 36" portable, with or without diesel power. Also, all sizes 4 x 6 to 48 x 60.
GYRATORY CRUSHERS: All sizes.
REDUCTION CRUSHERS: Symons 2 ft., 3 ft., 4 ft. and 5½ ft. Good Roads 1040. Allis Chalmers R122.
MINE HOISTS: Single and double drum, 100 H.P. to 1050 H.P.

A. J. O'NEILL
LANSDOWNE, Pa.
Phila. Phones: Madison 3-8300 — 3-8301

50 UNUSED CRANES

Insleys — Lorain — Byers — Units
Quickway — Osgood — P & H — Hansen

AS IS	RECONDITIONED
½ Yd....$2500.00	½ Yd. ...$4000.00
	¾ Yd....$6000.00

⅜ to 2 Cu. Yard
DRAG AND CLAMSHELL BUCKETS
NEW AND USED

45 Booms for many model cranes.

100 UNUSED CHRYSLER 8
MARINE MOTORS

WRECKING 1000 G.I. TRUCKS

ELLIS-NOVACK COMPANY
2510 W. Empire St. Burbank, Calif.
Stanley 72305

FOR SALE—NEW PROPELLING and CROWD CHAINS

For All Makes of Shovels And Cranes
From ½" to 5" Pitch
SUBSTANTIAL DISCOUNTS
"Thousands of other Construction Items"

BABCOCK EQUIPMENT CO., INC.
163 Highland Ave., Needham Hgts. 94, Mass.
Tel. Needham 3-3040—3-2929

BOILERS

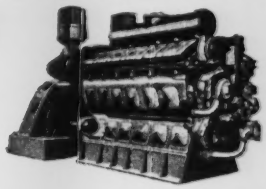
10 to 1000 H. P.
NEW-USED RECONDITIONED
Steam, Gas and Electric Power Equipment

J. PARKER THOMPSON CO., INC.
507 FIFTH AVE., NEW YORK CITY
MURRAY HILL 7-6547-8-9

"Opportunity" Advertising:
Think
"SEARCHLIGHT"
First

DIESEL POWER

FOR
IMMEDIATE SHIPMENT
UNIT CAPACITIES—10 TO 1875 KVA
A.C.—50 AND 60 CYCLES
VARIOUS VOLTAGE



A PARTIAL LISTING OF OUR INVENTORY

KVA	Make	Model	HP	RPM	KVA	Make	Model	HP	RPM
1875	Fairbanks Morse	38D10	2960	600	375	Enterprise	DSG-6	450	450
1420	Fairbanks Morse	38D8½	1600	720	330	Superior	KNA	390	514
1250	General Motors	16-278A	1600	720	312	General Motors	8-268A	450	1200
937.5	General Motors	12-567	1080	720	312	Clark	MH6-4	374	327
625	Alco	6-12½x13F	750	600	125	General Motors	3-268A	150	1200
425	Baldwin	VO-6	510	450	75	General Motors	6004SC	90	1200
400	Buckeye	80	480	600	62.5	Int'l Harvester	VD-18	76	1200

D.C. UNITS ALSO AVAILABLE

A. G. SCHOONMAKER COMPANY, INC.
DIESEL DIVISION, 50 CHURCH ST., NEW YORK 7, N. Y.

AIR COMPRESSORS
17 Diesel 315, 500, 600, 900 & 1600 Ft.
22 Elect. 676, 1000, 1302, 1750, 2200, 3178, 3865 Ft.
11 Less Than 315, 1000, 1200, 3000 & 4000 Ft.
CRANES — SHOVELS — DRAGLINES
7—Diesel & Steam Lorain Cranes 20, 25, 30 & 40 T.
5—25, 30 & 40 Ton Steam & Elec. Whirley Cranes.
2—40 Bucyrus 3/4 Yd. 80' Boom Steam Crane.
25 ton Amer. Gas Loco. Crane.
4B Bucyrus, 50B Northwest Diesel Shovels Draglines.
TUNNEL EQUIPMENT
Conway, Elmen & Gardner Denver Tnl. Shls.
26—Battery & Trolley Locomotives, 4, 6, 8 & 10 T.
200—Tunnel Cars—2, 4, 6 & 8 Yd. Cap.
RAILROAD CARS
161—Dump Cars 15, 20, 5, 7, 10, 20 & 30 Yd. Cap.
90—10,000 Gal. Tank Cars. 100 Box Cars.
128—40 & 50 Ton Flat Cars. 25—50 Ton Gondolas.
LOCOMOTIVES
17—Diesel 100, 80, 65, 45, 50 & 10 Ton.
42—Gasoline 65, 25, 20, 16, 10 & 5 Ton.
HOISTING ENGINES
STEAM: 14x12, 9x10, 8½x10 & 7x10.
ELECTRIC: 50, 30, 25, 20, 15, 10 & 150 H.P.
PILE HAMMERS & EXTRACTORS
9—McKiernan-Terry No. 5B, 5, 7, 9, 9B5, 10B3, 11B5.
Vulcan 800 & Vulcan 72 & 1 & 5000.
PUMPCRETE
Model 160, 150 & 180 & 200 REX Pumpcretes.
STEEL DERRICKS
2—Clyde 15 ton 50'9" x 60' 100 & 125° Booms.
2—Terry 25 ton 100' Boom Guy Steel Erectors.
2—7-10 Guy 55' & 70' Ton 100'.
STEEL STORAGE TANKS
14—5,000, 10,000 & 50,000 Bbl. Cap.
17—10,000-15,000 & 25,000 & 42,000 gal. cap.

R. C. STANHOPE, INC.
Tel: MUrrayhill 2-3075 60 E. 42 St., N. Y.

PAVERS

2—REX Model 34E Dual Drum Pavers Model Duomatic. Powered with 6 Cylinder Gasoline Engine, Rex Mechanical Man. Batchmeter. 35' distributing Boom. Serial Nos. GG-165 and GG-126. $12,000 each, ready to go to work.

FURNIVAL MACHINERY CO.
54th & Lancaster Ave., Philadelphia 31, Pa.

PUMPS AT SACRIFICE

Factory new Barnes Centrifugal Pumps
Sizes 2" to 6"
Immediate Delivery

HODGE & HAMMOND INC
1162 Grinnell Place New York 59, N. Y.

REX TRUCK MIXER

4 Yard—TM #407—On Mack
6BX1SH1205
In Good Working Condition $2500

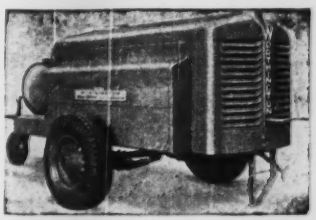
CONCRETE CARRIERS INC.
800 Passaic Ave. East Newark, N. J.

PORTABLE COMPRESSORS

Sales—Rental
Rental Purchase

30 CFM WORTHINGTON (Gas) 2 Pneu
60 CFM INGERSOLL (Gas) 2 Pneu
60 CFM CHICAGO (Gas) Skids—2 Pneu
85 CFM INGERSOLL (Gas) 2 Pneu
105 CFM WORTHINGTON (Gas & Diesel)
105 CFM INGERSOLL (Gas) 2 & 4 Pneu
160 CFM INGERSOLL 2 Pneu
210 CFM GARDNER DENVER (Gas) 4 Pneu
210 CFM WORTHINGTON (Gas & Diesel) 4 Pneu
315 CFM LeROI (Gas) 4 Pneu
315 CFM INGERSOLL (Diesel) 4 Pneu
315 CFM WORTHINGTON (Gas & Diesel) 4 Pneu
500 CFM WORTHINGTON (Diesel) 4 Pneu

STATIONARY COMPRESSORS
FOR RENT
ELECTRIC - STEAM - GAS



American Air Compressor Corp.
Dell Ave. & 48th St., North Bergen, N. J.
SINCE 1902

SALE OR RENT

1—Lima 34 Truck Crane 80' Boom.
1—Koehring 304 Diesel S.C. & Bhoe.
1—Northwest No. 6 Diesel S & Dragline.
1—American 6-85 Revolver 90' B.3/60 440V.
1—45' Crane Boom for Link Belt LS90—New.
1—5 Ton Wright 3 motor AC Floor Operated, Underhung Travelling Crane. 21'4" Span.
1—30 Ton Plymouth Std. Ga. Diesel Loco.
1—40 Ton Orton Diesel Loco. Crane.
1—30 Ton Browning Steam Loco. Crane.

B. M. WEISS CO.
Girard Trust Co. Bldg. Phila. 2, Pa.
Rittenhouse 6-2311

Equipment Values!

Tractor-Dozer — Caterpillar Diesel D6, #9C461, w/LeTourneau straight tilt dozer, LeTourneau double drum C.P. crawl, cat guard, pull hook, heavy duty equalizer spring, 18" track shoes. A really good, wide gauge D6, 65 d.b. HP. FOB Louisville $8550.00

Tractor-Dozer — Caterpillar Diesel D6, #R1909 w/Caterpillar 6S dozer and LeTourneau double drum C.P. Checked over, cleaned, painted. FOB Louisville $8500.00

Shovel — Lorain TL-7, #1001-3, crawler, powered by Cat Diesel D315, engine has an additional counterweight and circulating pump. Machine cost nearly $15,000 about 6 mo. ago. FOB Louisville $12,500.00

Trenchvator — Caterpillar Diesel D4, #7J4144-D, with a 42" 3/4 yd. bucket, front-mounted, tracks 12" and 18". Looks and runs good. FOB Louisville $3350.00

Tractor-Dozer — International Diesel TD9, #TD8823, w/Hurricane-Erie hyd. attachment and 30" track shoes. Ready to work. FOB Louisville $8195.00

Tractor-Dozer — Caterpillar Diesel D7, #4J4946, w/LeTourneau all-tilt dozer, LeTourneau double drum C.P. Engine of machine rebuilt 250 hours ago. Entire machine completely checked over. FOB Paducah, Ky. $7500.00

ROY C.
WHAYNE
SUPPLY CO.
800 W. MAIN ST. • LOUISVILLE, KY.
Evansville, Ind. Paducah Ky

1—10" 250 HP Diesel Dredge, new approx. '42. 17' wide x 37' long. $9950.00

1—12" Dredge with 2 D13000 cats. Hull 20 x 64' $22,500

8"—12" 14"—16" Available Portable and Standard.

Steam Dipper Dredge & Tender 7 yd. Derrick 4½—30 ton, new stiff leg 50' boom.

DIESEL ENGINES

Hercules 150 HP, Model DWXDS, like new $950

Kahlenberg, new '42 ..... $1850

GM 500 HP, 720 rpm, ... $5000

GM 1000 HP Marine, like new $11,000

New LeRoi West 24KVA, 1/60/120 $1250

Jaw Crusher 42 x 60 and 24 x 36 offers

EVEREADY SUPPLY CO.
E. J. McCallum, Pres.
805 Housatonic Ave. Bridgeport, Conn.
Phone—4-9471

FOR SALE OR RENT

USED Buckeye RB 12 foot Finegrader

EDELEN & BOYER CO.
1717 North 54th St., Phila., 31, Pa.
Greenwood 7-2000

FOR SALE

Lorain Shovel Model 80, 1-¾ yd. 1945. All latest features.
Bulldozer, Caterpillar D-7, hydraulic operated blade 1941 $4500.00

C & S CONTRACTING CO., Inc.
746 Fenimore St., Brooklyn, N. Y.
PResident 3-8012

WANTED

WANTED
AIR COMPRESSORS
VACUUM PUMPS & STEAM BOOSTERS

L. W. BAUER
22 Barnett St. Bloomfield, N. J.

WE BUY OR SELL
All Types of
TRENCHING MACHINES
AIR COMPRESSOR RENTAL CO.
19615 NOTTINGHAM RD. CLEVELAND
Kenmore 1-8000

SACRIFICE PRICE!

New Jaeger 10'-12' Spreader with 2 Double Flanged Wheels and 2 Flat Wheels.

New and Used Jaeger 10'-12'-14' Jaeger Model H Tandem Screed Finisher Flat Crown, Double Flanged Traction Wheels. Used, has worked only on two miles of road.

All Priced For Immediate Sale!

RUPP EQUIPMENT CO.
Buffalo, N. Y. Phone: DE 1182

FOR SALE

1—1947 Bay City 15T40 Cranemobile with reverse crowd and electric dipper trip . . . Crane unit serial #1622838 JXD Hercules engine; carrier unit Hercules WXLC3 engine; serial #201255. Three attachments: crane, backhoe and shovel front. In A-1 condition.

1—1946 Bay City Model 45 backhoe only with 19' boom and 36" cutting bucket on 24" crawler shoes . . . machine serial #4451. Powered by Waukesha gasoline motor model 6SRKR 46W, serial #676285. In A-1 condition.

Call
AMERICAN CONSTRUCTION COMPANY
Hartford 46-2531 for Details and Directions for Inspection

WANTED FROM SURPLUS

3 SETS CATS FOR TD-14 INTERNATIONAL
1 SET FOR D-8 and 1 SET FOR D-7 CATERPILLAR TRACTOR

Quote price and when available to 314 Oak Street, Syracuse, New York

WANTED
¾ Yd Lima Model 34, Diesel Crane
1½ Yd Steam Crawler Crane
Material Bins and Cement Bins
Locomotives and Locomotive Cranes
Crawler and Gantry Cranes

STONE THE CRANE MAN
1132 Prudential Bldg., Buffalo, N. Y.

BUTLER Batch Plant, 240 Ton, 4-compartment, 3 cu. yd. batcher & beam scales. Used only one job, like new. $3250.00 loaded.

HELTZEL BULK Cement Plant. Cement silo 300 barrel capacity, 16 cu. ft. Cement batcher. Used with above. $2800.00 loaded.

UNIVERSAL 20 x 36 RB. Primary Crushing Plant, with apron feeder, undercon veyor & D-8800 Cat. Diesel, all mounted tandem pneumatic rubber. Req. factory outfit. $7200.00

36" PIONEER 30 ft. Apron Feeder on tandem rubber tired truck with IHC Power Unit. $4000.00

Wenzel Machinery Rental & Sales Co.
2136 Jefferson Street Kansas City, Mo.

AVAILABLE IMMEDIATELY
1947 Le Tourneau
Super "C" Tournapulls With Scrapers
Very Good Condition

TYLER EQUIPMENT CORPORATION
P. O. Box 929 Springfield, Mass.
Tel. East Longmeadow 375

WANTED
DETACHABLE ROCKBITS
All types and sizes.

W-6156, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

FOR SALE

Bearing Piles and H-Beams

8"	x 36#	40'
10"	x 42#	40
10"	x 49#	40
12"	x 53#	40
12"	x 65#	40

Plates — from 3/16" to 1"

WRITE WIRE CALL

QUEENSBORO STEEL CORPORATION
47-29 Van Dam Street
Long Island City 1, N. Y.
Stillwell 4-2720

FOR SALE
PORTABLE CONCRETE PLANT
1—Erie Strayer 1 cubic yard Portable Concrete Plant
P. O. Box 32, Uwchland, Penna.

WANTED TO BUY
8 or 10 in. Suction Dredge
Shallow Draft, complete with accessories.
Write HUDGINS & ALFONSO, Inc.
Ramrod Key P. O., Florida

FOR SALE
H. D. 7 BULLDOZER
excellent condition

Owners will consider trade with larger dozer, ie., TD 14, D-6 or HD 10, with cash-difference.

Call Bertucci Fieldstone 7-5724
87-19 259th St., Floral Park, L. I.

WANTED
Current Model Bucyrus-Erie
1208 Electric Ward Leonard Controls 2300 V 60 C with Shovel Front—Prefer no dragline attachments.
Wire Serial, condition and net price.
1846 No. 16 Ave., Phoenix, Ariz.

CRANES:
One (1) North West Model 6
One (1) Speed Crane one (1) yard capacity.
Location St. Louis, Missouri
ES-7284, Engineering News-Record
330 W. Madison Ave., Chicago 11, Ill.

15 YARD TOURNAROCKERS

4—15 Cy. Yd. Tournarockers,
Purchased New—March 1949
Used Approximately 1,500 Hours
GOOD AS NEW
Cost $21,000.00—
SALE PRICE $13,500.00
Located at Wylie, Texas

J. W. MOORMAN & SON
BOX 128 WYLIE, TEXAS

EARTH DRILL

1—New BUDA Earth Drill, Model HRE, Powered with Gasoline Engine, including electric starter. Automotive type transmission provides 4 speeds forward and one in reverse. Hydraulically controlled. Tower lowers to horizontal traveling position. Drills holes in ground 16" x 24" in dia. x 10 ft. deep.

FURNIVAL MACHINERY CO.
54th & Lancaster Ave., Phila. 31, Pa.

FOR SALE

EXCELLENT CONDITION
2—Caterpillar D8 Dozers.
1—Caterpillar D7 Dozer.
1—Bucyrus Erie 21½ C.Y.
2—Scrapers 12-15 C.Y.
LOCATED IN WEST VIRGINIA

N. A. FINN CO.
369 Lexington Ave. N. Y. C.
LExington 2-3868

RAILS-TIES

TRACK ACCESSORIES

PILING

FOR SALE

COMPLETE CRUSHING PLANT

24" x 36" Primary jaw crusher with Doerr Classifier. Also screening and washing plant. Nine conveyors. Size 37 secondary crusher. Vibrating screens, etc. Plant in excellent condition and can be inspected at Lackawack, New York. See W. A. Dardess, Jr.

Also 3 ATHEY WAGONS

ES-2331, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

Need RAILS?

You'll get them "Faster From Foster"

Largest stocks in U.S.
NEW & RELAYING RAILS
Track Tools and Accessories

Foster guarantees material satisfactory or returnable freight both ways, our expense.

✔PIPE ✔ PILING ✔ WIRE ROPE & SLINGS

L. B. FOSTER CO.
Pittsburgh 30, Pa. New York 7, N.Y.
Chicago 4, Ill. Houston 2, Tex.

For Sale or Rent

STEEL SHEET PILING

Carn. MP-101 section—Practically New
419 pcs. 62-50 ft. 141 pcs. 39-30 ft.
66 pcs. 49-40 ft. 146 pcs. 29-20 ft.
IMMEDIATE SHIPMENT from Kentucky

Beth. SP6a section—Used Redrivable
74 pcs., also corners, 14-10 ft.
Beth. SP7a section—Used Redrivable
73 pcs., also corners, 14-10 ft.
IMMEDIATE SHIPMENT from Alabama

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St. St. Louis, Mo.

PIPE

INTERLOCKING STEEL SHEET PILING

All lengths & strengths — RENT or BUY

L. B. FOSTER CO.
Pittsburgh (30) New York (7) Chicago (4) Houston (2)

EST. 1904

DAVIDSON

PIPE COMPANY INC.
FORMERLY
ALBERT & DAVIDSON PIPE CORP.

ONE OF THE LARGEST STOCKS IN THE EAST
Seamless and Welded ⅛" to 26" O.D.
All wall thickness Manufactured.
Specialty large sizes.
Cutting — Threading — Flanging — Fittings — Valves.

Call GEdney 9-6300
50th St. & 2nd Ave., Bklyn 32, N. Y.

NEW—RAILS—Relayers

All sizes and weights. Also frogs, switches, spikes, bolts, tie plates, contractors' and mine equipment carried in stock.

M. K. FRANK
480 Lexington Ave. Park Bldg.
New York, N. Y. Pittsburgh, Pa.
Reno, Nevada Carnegie, Pa.

We do a Nation-Wide business in

STEEL SHEET PILING

New & Used Rented & Sold

55 pcs. 60 ft. Inland 122-Louisiana
206 pcs. 60&50 ft. Carn. MP101-Illinois
204 pcs. 60&40 ft. Inland 127-Chicago
15 pcs. 30-27 ft. Beth. DP2-Buffalo
575 pcs. 27-15 ft. Carn. M102-Minnesota
96 pcs. 23-19 ft. Beth. DP2-Tennessee

Other lengths & sections at various locations

All sizes Vulcan & McKiernan Pile Hammers & Extractors for Rent and Sale—Shop Rebuilt
Regardless of location of your job, wire or write

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St., St. Louis, Mo.
"WE BUY STEEL PILING FOR CASH"

EVERYTHING FOR THE TRACK FROM
SWITCH TO BUMPER

75# ASCE—85# ASCE—
100# ARAA
NEW & RELAY TURNOUTS
in stock for
Prompt Shipments
with and without Switch Stands

MORRISON RAILWAY SUPPLY CORP.
RAND BLDG. BUFFALO 2, N.Y.
EMPIRE BLDG. BIRMINGHAM 3, ALA.

PIPE

VALVES and FITTINGS
All Sizes in Stock
NEW—USED
GREENPOINT IRON & PIPE CO., INC.
Bogart and Stagg Streets, Brooklyn, N.Y.

STEEL SHEET PILING

85 Pcs. Beth. DP2 — 45 Ft. Penna.
2200 Pcs. Carnegie MP101 — 40-62 Ft. Kentucky.
1600 Pcs. Beth. SP3 — 8 to 9 Ft. Virginia.
1160 Pcs. Carnegie M102 — 15-55 Ft. South.
149 Pcs. Beth DP2 — 27 Ft. Penna.
9 McK.T. Hammers 6, 7, S8, 9B3, 10B, 11B3.
Vulcan 3000, 1 & 2 — No. 800 Extractor.
1—Bucyrus 61B & 42B Steam Cranes.

DARIEN, 60 E. 42nd St., N. Y. 17, N. Y.

PROFESSIONAL SERVICES

Consoer, Townsend & Associates

Water Supply—Sewerage—Flood Control & Drainage—Bridges—Express Highways—Paving—Power Plants—Appraisals—Reports—Traffic Studies—Airports.
351 East Ohio St., Chicago 11, Illinois

Metcalf & Eddy

ENGINEERS
Investigations—Reports—Design
Supervision of Construction and Operation
Management—Valuation—Laboratory
Statler Building 111 Sutter St.
Boston 16 San Francisco 4

Gustave M. Goldsmith

Consulting Engineer
Structural and Building Design
Quantity Surveys
Production Planning
1734 Bella Vista, Cincinnati 37, Ohio

Jones, Henry & Schoonmaker

(Formerly Jones & Henry)
Consulting Sanitary Engineers
Water Works—Sewerage & Treatment
Waste Disposal
Security Building Toledo 4, Ohio

Albright & Friel, Inc.

Consulting Engineers
Water, Sewage and Industrial Waste Problems, Airfields, Refuse Incinerators, Power Plants, Industrial Buildings, City Planning, Reports, Valuations, Laboratory.
121 So. Broad St., Philadelphia 7, Pa.

Frederick H. Dechant

Consulting Engineer
Chairman of the Board,
Frederic R. Harris Inc.
Water Works, Industrial Wastes, Sewerage, Recovery Processes, Hydraulic Works, Gas Plants.
Phila. Fidelity Phila. Trust Bldg.
New York 27 William St.

Inspecting and Testing

The Haller Testing Laboratories, Inc.

Testing and Inspecting of Construction Materials
881 2nd Avenue, New York 17, N. Y.
New York, N. Y. • Boston, Mass.
New Haven, Conn. • Plainfield, N. J.

SHORT CUT in ROCK @1,000,000 YDS. PER MILE

HARRISON CONSTRUCTION CO. SLICES PITTSBURGH HILLSIDE WITH 9 LORAINS!

Talk about tough ones! 1,250,000 cu. yds. of excavation . . . mostly rock . . . side hill cuts up to 240 ft. deep . . . slicing off the sides of a mile long mountain. It's a new $3,000,000 four lane super-highway on route 247 in Pittsburgh's southside — known as the West End By-Pass to South Hills.

Harrison Construction Co., long-time Lorain users, moved in a fleet of 9 Lorains — a part of the 36 Lorains they have purchased over the years — for double shift operation.

Scampering over the hillsides like a mountain goat, this 3/4 yd. Lorain shovel acts as a pilot shovel to build access roads to the tops of the cuts so that bigger Lorains can get onto the job and turn out the major production.

Tough jobs . . . the roughest rock . . . big fleets . . . successful contractors . . . go hand in hand with Lorains. Owners like Harrison Construction Co. have proved by experience over many years on many jobs that Lorains pay off in profitable performance . . . that's the reason Harrison made this big, tough job *an all Lorain job!*

It will pay you to learn why the big names pick Lorains . . . from your helpful, handy Thew-Lorain Distributor!

THE THEW SHOVEL CO.
LORAIN, OHIO

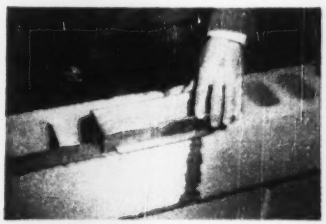
THEW LORAIN®
SHOVELS • CRANES • CLAMSHELLS • DRAGLINES
HOES • MOTO-CRANES

Two big Lorain shovels, working on different benches, gouge out the rugged hillside. Most material was heavy rock, and the Lorains made easy work of clay, sandstone, limestone, slate and shale, too!

NEW PRODUCTS

Engine-Over-Axle Power Grader Features Extra-Large Tires

MODEL 501 ENGINE-OVER-AXLE POWER GRADER has extra-large low-pressure tires for better flotation, traction, and maximum performance. Features include: Cab with an inside clearance of 6 ft. 6 in.; undercoating on cab to reduce noise; and 10-gal hydraulic oil tank to maintain low oil temperature. Power is provided by a 50-hp gasoline or diesel engine. Attachments include a hydraulic scarifier with replaceable alloy-steel plow teeth. The 501 can be used for cutting and cleaning ditches; building, widening, shaping, and maintaining roads; and for sloping at angles as great as 1:1.—MEILE-BLUMBERG, NEW HOLSTEIN, WIS.

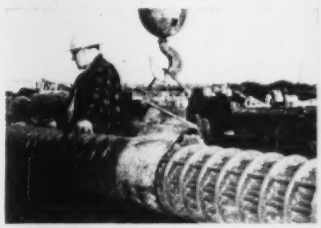


Applicator for Brick Mortar

Tool is designed to simplify application of mortar in laying brick or concrete walls. Tool sets on the wall, is filled with mortar, and then drawn over the surface needing mortar. As tool is drawn over the surface, it automatically spreads mortar in an even, neat manner. A guide on the tool keeps mortar from falling over bricks. An adjustable gate controls thickness of mortar.—KANTAR & KESTER, CURWENSVILLE, PA.

Fiberglas Expansion Joint

Non-extruding joint material consists of an asphalt-impregnated bonded glass wool board faced on both sides with a heavy asphalt-saturated kraft paper. The Fiberglas expansion joint features: Light weight, will not decompose or rot, absorbs less than one-half of the volume of water permitted by specifications, and is said to recover more than 70% of its original thickness when subjected to extreme temperatures. It is available in ½, 2, and 1-in. thicknesses, in 24-in. widths, and in 10, 11, and 12-ft lengths. Special sizes are available.—KEYSTONE ASPHALT PRODUCTS CO., DIV. AMERICAN-MARIETTA CO., 43 E. OHIO ST., CHICAGO 11, ILL.



Slings of Woven Wire

Expanded line of woven wire slings is available in standard widths of 2 to 20 in. and in lengths from 36 to 132 in. They are fabricated from wire mesh produced from any metal or alloy. Handles permit use of choke or basket hitch.—CAMBRIDGE WIRE CLOTH CO., CAMBRIDGE, MD.

Entraining Agent Dispenser

Automatic dispenser for liquid air-entraining agents passes the liquid through a bag which is alternately opened and closed at top and bottom. The Techkote Mach unit release can be actuated by hand, or by mechanical means in connection with the water discharge to the concrete mix. Quantity discharged can be easily set from 3 to 40 oz. Features include the elimination of: Internal moving parts, air vents, pistons, and packing glands or nuts.—TECHKOTE CO., INGLEWOOD, CALIF.

Transformer Welder

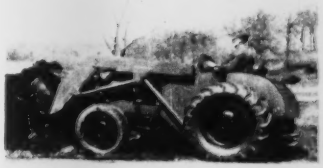
Transformer-type ac arc welder has no moving parts. Welding current is adjusted by an electrical reactor. Two models are in production: Model TSP-205-C with power factor correction rated 200 amps at 30 v; and Model TSP-182-C with power factor correction and limited input for operation on REA lines rated 180 amps at 25 v. A rheostat permits remote control. Steel casters are standard equipment.—HOBART BROS. CO., HOBART SQUARE, TROY, OHIO.

Paint-Spray Outfit

Portable paint-spray outfit is connected to two spark plug openings of any automotive engines, eliminating the need for a separate power unit. Pumping unit of the Engmair is operated by the compression stroke of the engine, and supplies up to 105 lb of air pressure. The gun is equipped with a 3-spray nozzle—fan type, round, or angle. Complete unit weighs 8 lb.—G. H. MEISER & CO., 327 E. MARQUETTE ROAD, CHICAGO 37, ILL.

Heavy-Duty Truck Diesels

Three new models have been added to the Buda 161 series of heavy-duty truck engines. Model 6DAS-844 Supercharged is rated 280 hp; the Model 6DA-844, 215 hp; and Model 6DA-779, 185 hp. All are 6-cyl diesels with practically the same mounting dimensions. A special feature is the monolobe Dyna-Swirl combustion chamber, said to develop increased horsepower.—THE BUDA CO., HARVEY, ILL.

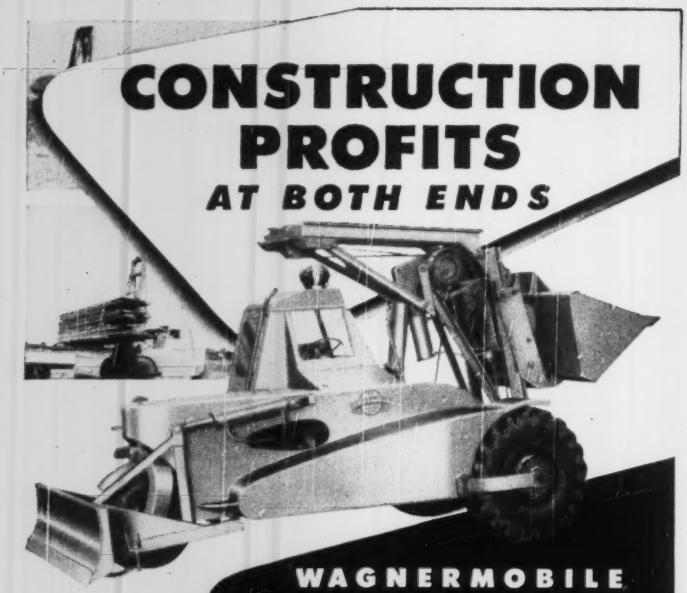


Front-End Power Shovel

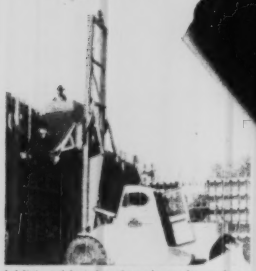
Movement of lifting arm and crowder arms on front-end-mounted shovel permits loading with tractor brakes locked. Crowder arms permit digging 15 in. below wheel level, and raising loads to heights of 7 ft. After loading is accomplished, shovel is retracted to a close carrying position to

(Continued on next page)

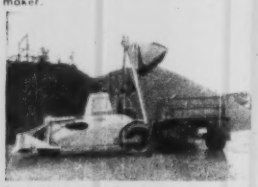
CONSTRUCTION PROFITS
AT BOTH ENDS



WAGNERMOBILE
DUO-WAY
Scoop



Additional height of track as shown here makes the Duo-Way a versatile profit-maker.



Scoop lifts to a height of 14 ft. and track tilt of 10° makes loading easy.

Big 84-inch dozer blade with 8000 lbs. down pressure levels land on this job. Scoop at other end can be filled for ballast.

SCOOP AT ONE END . . . . .
. . . . DOZER AT THE OTHER

Power-packed, all hydraulic controlled, the Wagnermobile Duo-Way Scoop cuts operating costs. Saves in both labor and equipment. Four big operations in one . . . loader, dozer, truck and tractor.

Big 84-inch dozer blade dozes out a bank . . . 1 cubic yard scoop at the other end scoops up dirt, lifts it and loads it. All by one machine—Wagnermobile Duo-Way Scoop.

Wagnermobile Special Features:

- Driver in side saddle position has all around vision . . . perfect control.
- Planetary drive . . . rugged "extra" power.
- Improved hydraulic controlled track and dozer.
- Special tilt control track tilts 10° back, 10° forward.
- Top section folds down to 9 ft. 6 in. for low road clearance.
- Highway speeds up to 20 mph.
- 4 speeds forward, 4 speeds reverse.
- Complete assortment of attachments for versatility.
- Wagnermobile Duo-Way Scoop is designed for top performance. Job tested for more profit on every job.

Write for literature and address of your nearest dealer.

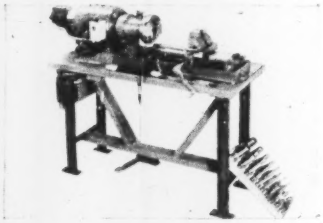
We reserve the right to make improvements in design and specification without notice.

MIXERMOBILE MANUFACTURERS

WAGNERMOBILE

Box 7527 • Portland 20, Oregon

prevent tipping and teetering caused by unbalanced weights. Arms can be extended to reach 48 in. in front of tractor. The overthrow-type bucket is hydraulically controlled. Information may be secured by writing: LESSMAN MFG. CO., DES MOINES 4, IOWA.

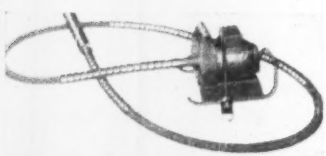


Hose-Line Assembly Machine

Model I-1766 hose-line assembly machine handles all standard Aeroquip fittings including male pipe, swivel, flange, and elbow types. The machine is mounted on a heavy cast-iron base and is equipped with speed selector, tool-steel mandrels, and interchangeable jaws. The machine is small enough to be mounted on any ordinary shop bench. — AEROQUIP CORP., JACKSON, MICH.

Window Balancer

Sash cords and spring balancers are eliminated with new type of window balancer. Kwik-Out is composed of a metal shoe which presses against side jamb and develops a sash gliding action in the frame. These units can be installed in old windows or in new construction, as they are secured to the sash with a deformed plate equipped with a high tension spring and adjusting screw. — RCS TOOL SALES CORP., CHALSTROM BLDG., JOLIET, ILL.



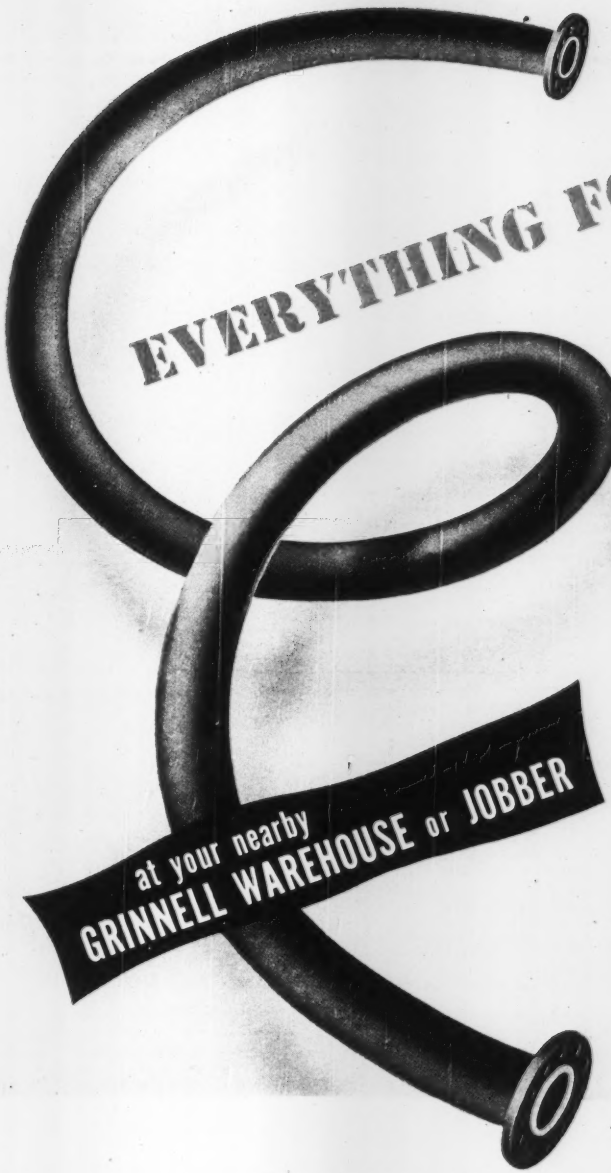
Electric Vibrator

Lightweight electric vibrator is equipped with a flexible shaft and sealed-in-oil vibrator head. The motor, which delivers up to 9,500 rpm, is protected by special skid-mounting. Double handles simplify lifting in either the horizontal or vertical position.—STOW MFG. CO., BINGHAMTON, N. Y.

Mobile Radio Unit

FM 2-way mobile radio unit is designed specifically for true adjacent-channel systems. The Uni-Channel Sensicom Dispatcher is available for

(Continued on page 105)



- Pipe
- Valves
- Grinnell-Saunders Diaphragm Valves
- Pipe and Tube Fittings
- Welding Fittings
- Engineered Pipe Hangers and Supports
- Prefabricated Piping
- Thermolier Unit Heaters
- Plumbing and Heating Specialties
- Water Works Supplies
- Industrial Supplies

Grinnell also manufactures and installs automatic sprinkler fire protection systems and Amco humidification and cooling systems.

More than 1000 Grinnell warehouses and jobbers . . . one within easy reach of your phone . . . are ready to give you prompt delivery on any standard piping product. When the job calls for specialized piping products or installations, Grinnell has the manufacturing facilities, products, experience and engineering knowledge to "deliver the goods".

GRINNELL

Grinnell Company, Inc., Providence 1, R. I. Warehouses: Atlanta • Buffalo • Charlotte • Chicago • Cleveland • Cranston • Fresno • Kansas City • Houston • Long Beach Los Angeles • Milwaukee • Minneapolis • New York • Oakland • Philadelphia • Pocatello • Sacramento • St. Louis • St. Paul • San Francisco • Seattle • Spokane

You hear it from coast to coast...*

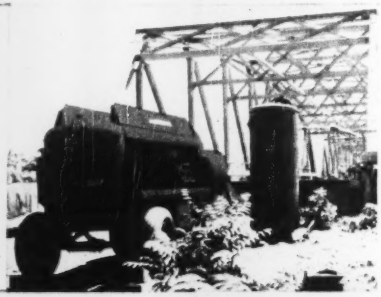
"It's BLUE BRUTES For My Money!"

***PENNSYLVANIA**

A 315′ Portable Compressor and UMW Wagon Drill, one of many Blue Brute teams owned by Cramer Construction Co. of Lebanon, Pa. Pres. G. B. Cramer writes: **"We have used Blue Brutes for several years, and on our Lebanon Veterans' Hospital job have five Blue Brute Compressors powering Worthington Wagon Drills and Rock Hammers. As evidence of their entirely satisfactory performance we recently purchased another 315′ Blue Brute Compressor."**

***OHIO**

In Waterville, Ohio, the Crawford Steel Construction Co., Inc., of Cincinnati, erected the structural steel on the new highway bridge across the Maumee River. Company official J. A. Crawford says: **"Our 210′ Blue Brute Compressor is efficient, well constructed and rugged. It has given us excellent service, and we are more than willing to recommend it highly . . . This first experience with your products is evidence to us of Blue Brutes' superiority.**



***OREGON**

It's another Blue Brute UMW Wagon Drill. Ready to swing into action at any angle, it is here helping to cut through a road cut where the timber grows tallest. The Kuckenberg Construction Company of Portland, Ore., are the owners and the report from this firm says they **"wish all their other machines on the job were as good . . . and are going to change to Blue Brutes in future replacements."**

***WISCONSIN**

Opening up a new limestone quarry in Sussex, Wisconsin, is easy work for these rugged, hard-hitting Blue Brute team-mates. The fast, versatile UMW Wagon Drill is drilling 6-foot holes for explosive charges. Power source is a 315′ Blue Brute Compressor, that gets all the air out of every drop of fuel. Vice-President Lloyd Wolf of the Quality Limestone Corporation, reports: **"After thorough investigation we decided Worthington equipment was best . . . They are fine machines."**

From the Atlantic to the Pacific you'll find Blue Brute owners — on every type of construction project, from the smallest to the largest — glad to tell you of the cost-cutting, trouble-free performance that is helping make estimates pay handsomely.

There are a lot of sound reasons for this country-wide acclaim — all adding up to the fact that *there's more worth in Worthington*. Your nearby Worthington-Blue Brute Distributor is ready with those reasons, and can make immediate deliveries. See him, or write us direct.

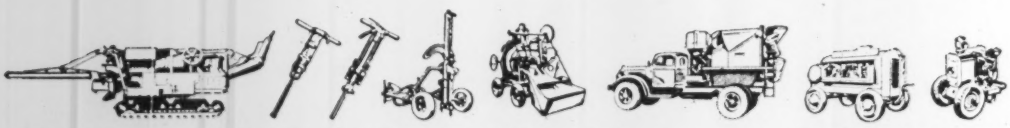
Worthington Pump and Machinery Corporation
Construction Equipment Department
Harrison, New Jersey

Distributors In All Principal Cities

WORTHINGTON

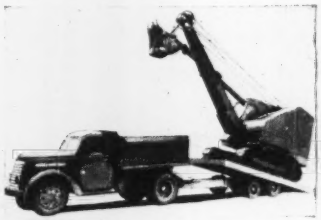
BUY BLUE BRUTES

HO.5



IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB

operation in the 25-50 megacycle or the 152-174 megacycle land mobile service bands. It has a rated RF power output of 12 watts in the low band and 10 watts in the high band. Models are available for operation from 6-v dc or 117-v ac primary power sources. — Motorola, Inc., 4545 Augusta Blvd., Chicago 51, Ill.



Tandem-Axle Tilt Trailer

Three new tandem-axle tilting-platform LaCrosse semi-trailers are available in capacities of 13, 16, and 20 tons. Unlocking a safety catch automatically tilts the platform. The platform returns to level as equipment is driven on. Two double-acting hydraulic cylinders cushion the 96-in.-wide trailer platform while it is being tilted with or without load. — La Crosse Trailer Corp., La Crosse, Wis.

Double-Coverage Shingle

Interlocking asphalt shingle is said to provide double coverage, to lay faster, and to stay locked. This Carey roofing requires 96 shingles per square. Its large size permits basket-weave-design roof patterns. Double v-lock design holds the shingle securely in place. Shingle is held in 8 places by 4 nails which secure it to the wood deck, plus 4 locks which fasten it to 4 other shingles. Carey Double Coverage Windmaster weighs 225 lb per square. —The Philip Carey Mfg. Co., 217 E. 8th, Cincinnati 15, Ohio.

Belted Generators

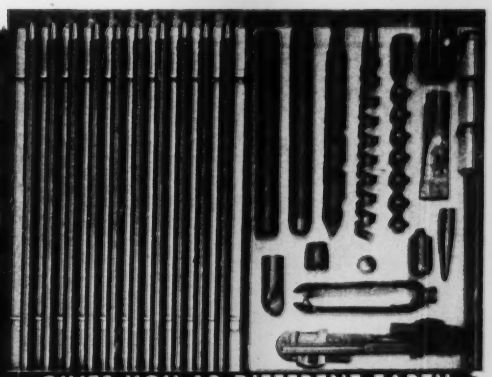
Electric generators can be belted to any available power unit or tractor. Furnished in two sizes—3 and 5 kw—they are designed for operation at 1,800-rpm 60-cycle 120-v. Frame is of drip-proof construction for service when exposed to the weather. Slide rail permits adjustment of belt tension after tractor or power unit has been spotted in place. — Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.

Hot-Water Heating System

All-copper hot-water heating system features new-type radiators that have individual small blowers with both thermostatic and manual control. Circulating pump, attached to gas or oil-

(Continued on next page)

ACKER SOIL SAMPLING KIT



. . . GIVES YOU 12 DIFFERENT EARTH AND SOIL SAMPLING TOOLS!

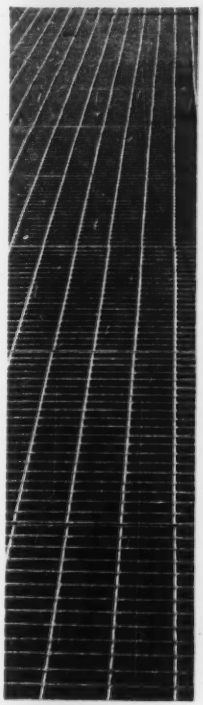
Here, in a compact, easy-to-carry kit (it fits into any automobile), are an even dozen tools for recovering accurate samples from practically any material except bed rock.

ITS MANY USES

Airfield runways • Aluminum silicate deposits Brick making materials • Foundation test borings Gold bearing sands • Clay Marl • Clay and kaolin for ceramics • Sand and gravel pits • Moisture content previous to soil compaction • Subgrade testing for highways • Base materials for soil cement stabilization Soil density for bearing data • sewer lines • etc.

We invite you to write us today for Bulletin 26-ENR. There are great savings when you use this 12-tool sampling kit, so don't delay.

ACKER DRILL COMPANY, INC. SCRANTON 3 PENNSYLVANIA



get the grating with all these features—

1 Maximum ventilation and light.
2 Minimum cleaning and painting surface.
3 Always safe, non-skid footing.
4 Rugged durability and long-life rigidity.
5 Completely fire-proof.
6 Quick, easy to install.

GET KLEMP Open Steel GRATING

Planning close quarters? . . . KLEMP will fabricate Grating to fit any location, exactly to your special requirements. Welded or riveted.

Write Today for Detailed Catalog

Also ask about KLEMP Steel Safety Mats, Floorsteel Flexible Floor Armor that rolls out like a rug and Hexsteel Heavy Duty Surface Armor.

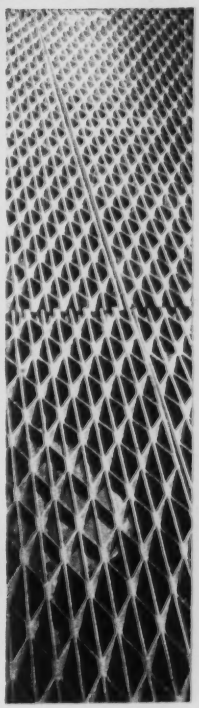
P.S. Our deliveries are excellent now!

KLEMP SURE FOOTED GRIP DIAMOND RIVETED GRATING

WM. F. KLEMP CO.

"Steel Flooring Specialists"

6608 S. Melvina St., Chicago 38, Ill.



fired boiler, pushes hot water through 1-in. copper tubing at a 10 fps speed. Wallrads are located at floor level so that blowers direct heat across the floor. Each Wallrad has its individual thermostat to permit independent control of heat in any room.—COPPER-HEAT INDUSTRIES, INC., 20212 LIVERNOIS, DETROIT 21, MICH.

Plaster and Mortar Mixer

Simple operation and numerous safety features are claimed for the new Blue Brute 6-ft plaster and mortar mixer. Protective grill over mixer is equipped with a bag cutter. Bag platform is built on a 20-deg angle to allow contents to enter bowl without spillage. Six adjustable, wide, high-carbon steel blades and four stationary blades provide fast and thorough mixing action. Extra-wide blades, set close to drum shell, clean the drum on every revolution of the paddle shaft. Bowl lock prevents accidental dumping.—RANSOME CONSTRUCTION EQUIPMENT DIVISION, WORTHINGTON PUMP & MACHINERY CORP., DUNELLEN, N. J.

Plug-Valve Lubricator

Automatic lubrication forces measured amount of lubricant into lubricating channels of plug valves each time valve is opened and closed. The Delta unit can be used with valves from ½ to 20-in. in size. The valve may be opened and closed 50 to 100 times before reservoir must again be filled. To fill, hose connection of Delta lubricant gun is snapped onto top fitting and plunger handle given a few strokes.—DELTA ENGINEERING SALES CO., 806 LOUISIANA AVE., SHREVEPORT, LA.

New Product Briefs

Flooring material, applied by trowel, produces a woodlike surface. It can be applied to rough, uneven surfaces without underlayment. Setting time is 4 hours. Produced by: Roc-Wood Flooring, Chicago 16, Ill.

Water-repellent ignition seal, distributed by General Motors Corp., resists action of water, condensation, leakage, acid, fungus, and rust. Sherolite can be applied by spraying or brushing.

Speed reducer is stocked in 24 different right-angle-drive assemblies. Range varies from 1:20 to 1/8 hp. Manufactured by: Winfield H. Smith Corp., Springville, N. Y.

Speed governor is actuated by vehicle's miles-per-hour rate, permitting delivery of extra power for climbing grade (providing pre-set speed is not exceeded). Produced by: Speedmaster Corp., Plainville, Conn.

Portable fuel can delivers fuel by prepumped air pressure without lifting or funneling. Fillmaster can (Fillmaster Co., Toledo, Ohio) is equipped with hand-operated squeeze nozzle and safety valve.

Diesel-driven generators in five new models have been added to the line of D. W. Onan & Sons, Inc., Minneapolis, Minn. Equipped with automatic voltage regulators, they range in size from 12½ to 55 kw. All have gasoline-engine starting.

Firedoor built with Kaylo insulation carries a 1-hr fire rating. Covered with wood veneer, it resembles a conventional flush-type wood door.

Snap-on paint-can spout permits faster stirring and simpler pouring. In addition, it forms a resting place for wet brush. The Painter's Friend is produced by G. F. Osley Mfg. Co. of La Verne, Calif.

Waterproofing masonry paint (Formula 505) utilizes capillary action to draw material into voids in masonry. The manufacturer, Vitricrete Corp. of Cincinnati, states the formula has withstood pressures up to 160 psi.

Viennese-made arc welder has a 60 to 375-amp rating. Model RI N features stepless, loss-free regulation of welding current over the entire current range. Available from: American "Elin" Corp., New York 5, N. Y.

STAINLESS STEEL

WHICH ALLOY FOR YOUR PIPING JOB?

Industry is rapidly turning to stainless steels as standard material for an increasing number of piping applications. Their ability to withstand the action of many corrosive agents, their toughness in sub-zero applications, their strength and ductility in elevated temperatures, and their high scaling-resistant properties, answer many tough piping problems.

Recent surveys show that 95% of the demand for stainless steel piping is in these three types:

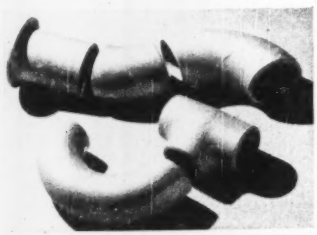
Type 304—18% chromium, 8% nickel
Type 347—18% chromium, 8% nickel, 1% Columbium
Type 316—18% chromium, 8% nickel, 2% Molybdenum

Each exhibits inherent qualities that make it ideal for certain applications. Thus, while the group as a whole covers 95% of industry's needs, individual applications should be studied carefully to determine which grade is best for the job.

For example, a prominent soap manufacturer's requirements are 10% Type 304, to eliminate product contamination—45% Type 347, to carry low temperature organic acids—and 45% Type 316, to carry the same acids at elevated temperatures.

In the food and dairy industry, where the service is only mildly corrosive, the main reason for using stainless steel is to promote cleanliness and to eliminate contamination. Type 304 satisfies most of the demand here.

To provide the greater strength, greater safety and permanently leakproof joints of welded piping construction, Tube Turns, Inc. has developed a wide selection of types and sizes of welded fittings and flanges in all three grades of stainless steels listed above. It's the most complete line available today.



TUBE-TURN Stainless Steel Welding Fittings made of the three alloy types listed here, are available in a wide range of parts and sizes, including elbows, returns, tees, reducers, caps, lap joint stub ends, laterals and crosses. Flanges are also furnished.

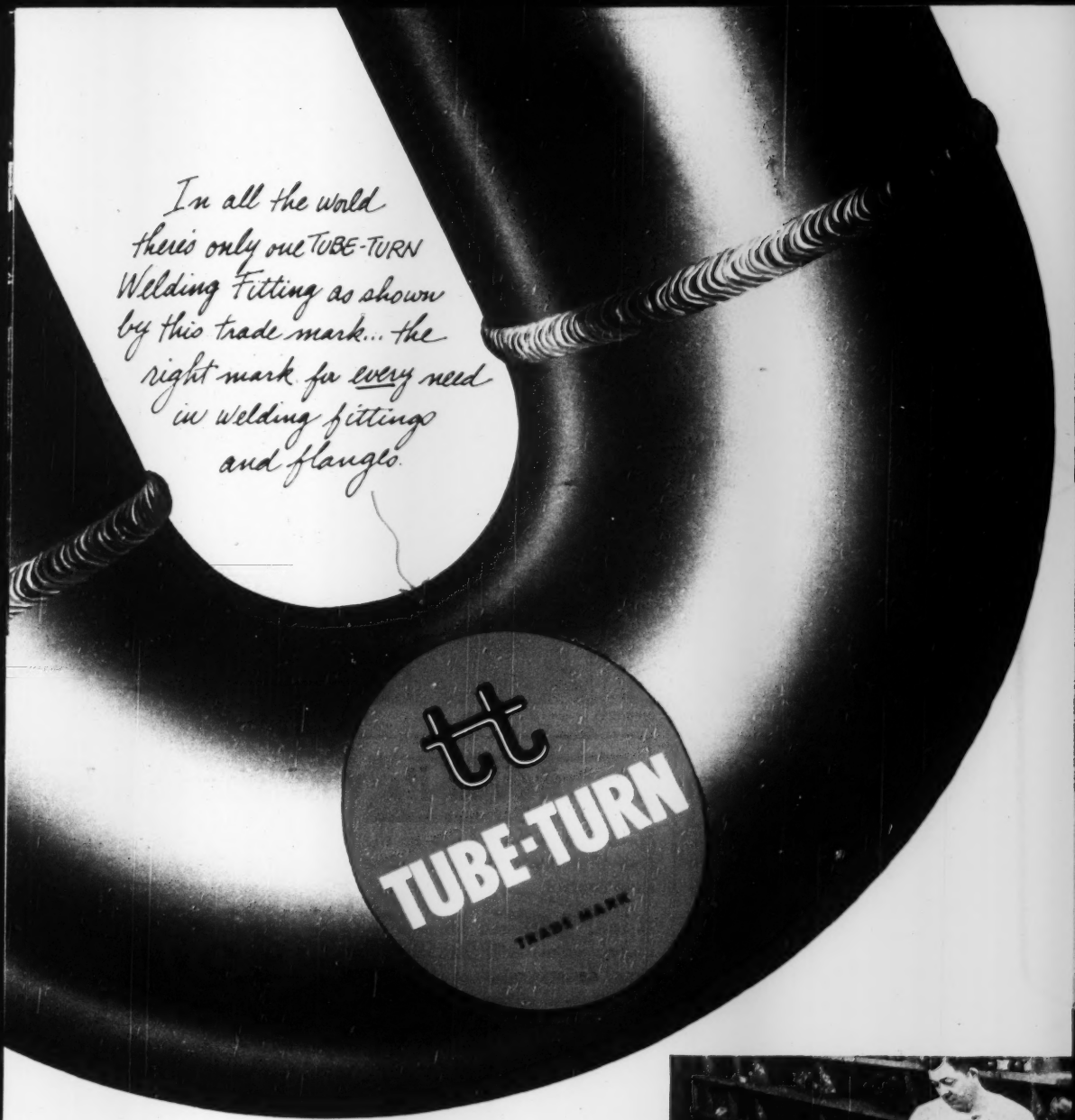
NEW CATALOG

Write today for your free copy of the new Stainless Steel catalog, just published by Tube Turns, Inc. It contains the complete description of TUBE-TURN Stainless Steel Welding Fittings and Flanges, as well as valuable information on the use of stainless steel piping.

"Be Sure You See The Double tt"

TUBE TURNS, INC.

LOUISVILLE 1, KENTUCKY



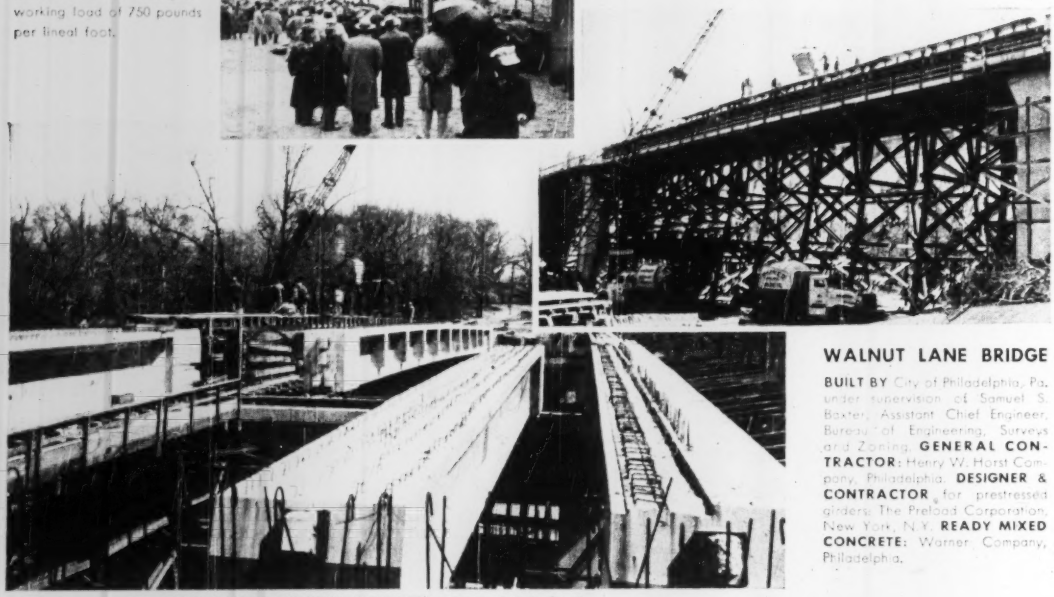
Your nearby TUBE TURNS distributor can serve you right from stock. Call him for prompt delivery.

TUBE TURNS, INC., LOUISVILLE 1, KENTUCKY DISTRIBUTORS IN ALL PRINCIPAL CITIES

DISTRICT OFFICES: NEW YORK • PHILADELPHIA • PITTSBURGH • CHICAGO • HOUSTON • TULSA • SAN FRANCISCO • LOS ANGELES

In Canada . . . Tube Turns of Canada Limited, Chatham, Ontario

A few of the 500 engineers and invited guests who witnessed load being applied to test girder which withstood almost 12 times the designed working load of 750 pounds per lineal foot.



WALNUT LANE BRIDGE

BUILT BY City of Philadelphia, Pa. under supervision of Samuel S. Baxter, Assistant Chief Engineer, Bureau of Engineering, Surveys and Zoning. **GENERAL CONTRACTOR:** Henry W. Horst Company, Philadelphia. **DESIGNER & CONTRACTOR** for prestressed girders: The Preload Corporation, New York, N.Y. **READY MIXED CONCRETE:** Warner Company, Philadelphia.

DIMENSIONS OF CENTER GIRDERS: Length, 160 ft. Depth 6 ft. 7 in. Width, top flange, 51 in.; bottom flange, 30 in.; web, 7 in.

Prestressed concrete proves its vast possibilities

Because of its unique properties, prestressed concrete offers to architects and engineers new construction opportunities that are almost without limit.

Among its many advantages are these: It requires less material, yet is stronger and more elastic. Internal stresses can be so accurately computed that the high qualities of modern materials can be more fully utilized than ever before. Thus it becomes practical to design structural members of lighter weights and longer, straighter spans and to build bridges and buildings of more graceful appearance. And prestressed concrete opens new opportunities in the field of prefabrication under close shop control.

Because prestressed concrete requires less material than conventional designs, substantial savings can often be made. For instance, the City of Philadelphia estimates savings of about $300,000 on the new Walnut Lane Bridge—the first bridge constructed of prestressed concrete in America.

All the materials to be used in this bridge had to possess known characteristics, be uniform, pass rigid tests. Specifications required that the concrete reach a compressive strength of 5400 psi. before prestressing. With 8½ bags of Lehigh Cement per cubic yard and a 2-inch slump, the concrete in the test girder reached a strength of 5800 psi. in 14 days.

Whatever your cement needs, there are Lehigh Cements to meet them. Our Service Department will be glad to help you with your specific problems.

Lehigh CEMENTS

LEHIGH PORTLAND CEMENT COMPANY • Allentown, Pa. • Chicago, Ill. • Spokane, Wash.

LEHIGH PORTLAND CEMENT • LEHIGH EARLY STRENGTH CEMENT • LEHIGH AIR-ENTRAINING CEMENT • LEHIGH MORTAR CEMENT

Manufacturers' Publications

Cranemen and Hitchers Manual—Safe procedures for cranemen and hitchers are described in a 36-p pocket manual (Form 25B6208A). The manual carries instructions for cranemen and hitchers, illustrates standard crane signals, shows how crane operation and inspection reports are executed, and carries reference tables which specify safe loads for wire rope, wrought iron and alloy-steel chain, manila rope, and S-part braided slings.—ALLIS-CHALMERS MFG. CO., HEALTH & SAFETY DEPT., MILWAUKEE, WIS.

Linemen's Safety Equipment—Folder describing general line of safety equipment features a description of an adjustable climber with replaceable gaff. Made of aluminum alloy, it has steel gaffs, rings, and locking screws. —W. M. BASHLIN CO., GROVE CITY, PA.

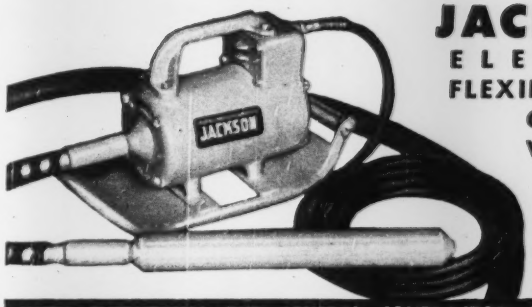
Heavy-Duty Bucket Loaders—Specifications and features of two bucket loaders are listed in this 8-p catalog. The Model P-11 is wheel mounted; the Q-11, crawler mounted. Graphic presentation of features considered most important by the manufacturer are shown, together with a series of mechanical views. Center spread is devoted to on-the-job photographs.—N. P. NELSON IRON WORKS, INC., CLIFTON, N. J.

Wellpoint Systems—New catalog describes a line of wellpoint equipment. A feature of the catalog is a large number of illustrations and descriptions of several typical dewatering jobs. The booklet stresses the Stang methods and equipment used in small and large projects.—JOHN W. STANG CORP., 8221 ATLANTIC AVE., BELL, CALIF.

Diesel-Nozzle Cleaning Kit—Leaflet 614 describes a kit of equipment for cleaning diesel nozzles. Items described in the leaflet include cleaning wires, pin vises, wire brush, bristle brushes, and lapping compounds.—BACHARACH INDUSTRIAL INSTRUMENT CO., 7000 BENNETT ST., PITTSBURGH 8, PA.

Curtain-Wall Construction—Progress report on stainless-steel curtain wall construction is an interim statement of proposed methods in which prefabricated sections of stainless-steel sheathing backed by insulating mate-

(Continued on next page)



JACKSON
ELECTRIC FLEXIBLE-SHAFT CONCRETE VIBRATOR
MODEL FS-150A

WITH EVERYTHING THE GENERAL CONTRACTOR COULD WANT

POWER GALORE: 2½ HP (continuous duty rating) Universal Motor provides more than ample power for uninterrupted placing of the stiffest mixes using the maximum length of shaft.

LIGHT SOCKET OPERATION: Wherever either 115 volt, 60 cycle single phase AC or Direct Current is available, this relatively inexpensive vibrator will do a bang-up job of concrete placement.

28 FOOT REACH: Available with any length of shaft up to 28 feet. Maximum length makes hard-to-get-to places readily accessible — saves time by making frequent changes of vibrator location.

CONVENIENT — RUGGED CONSTRUCTION: Double grip, skid-base handle with finger-tip control switch. Weighs only 50 lbs. Finest, smooth-running flexible shaft and fittings — built to take the most severe usage.

GRINDING: Countershaft attachment for quick conversion to wet or dry concrete rubbing.

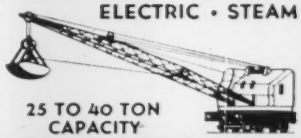
HIGH FREQUENCY — 3 VIBRATOR HEADS: 8,000 to 10,000 VPM and availability of three vibrator heads assure rapid as well as thorough consolidation of the stiffest mix concrete under all conditions.

See this outstanding general-purpose electric vibrator at your Jackson Distributor or write for complete facts.

ELECTRIC TAMPER & EQUIPMENT CO.

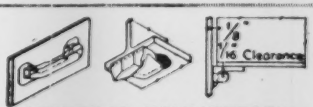
LUDINGTON, MICHIGAN

OHIO LOCOMOTIVE CRANES
GASOLINE • DIESEL ELECTRIC • STEAM



25 TO 40 TON CAPACITY

THE OHIO LOCOMOTIVE CRANE CO
BUCYRUS, OHIO



WELDING CONNECTORS
Saxe System Welded Connection Units for welded assembly

Saxe Units place in position and securely hold together structural parts to be welded.

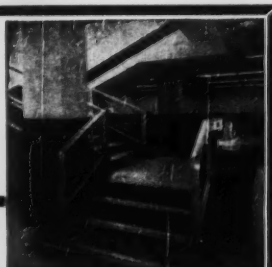
As used in many welded structures they *eliminate all hole punching*, producing an economical, rigid, safe and quickly erected structural frame.

Write for 58 pg. Manual containing full engineering design information for welded structures.

J. H. WILLIAMS & COMPANY
Buffalo-7, New York
Canadian Representatives
Air Reduction Canada, Ltd. Montreal 2, Canada

Definitely Superior
ORNAMENTAL METAL
Installations

IF you want ornamental bronze, aluminum or stainless steel NEWMAN makes it "equal to the finest" and at the best possible price. It will pay you to ask for our bid every time on doors, complete entrance units, canopies, railings, gates, grilles, tablets, letters.



WRITE TODAY!
Get folders featuring metallic work famous for 68 years, promptly and POSITIVELY WITHOUT OBLIGATION.

NEWMAN BROTHERS, INC.
666-680 W. Fourth St.
Cincinnati 3, Ohio

The longest-lived, most sensitive, trouble-free, low cost bin-level signal ever devised. For every make and type of bin —— and practically every material. One unit operates at top of bin, other at bottom. Long wearing, pressure-sensitive diaphragm actuates micro-switch to turn on signal. Extra heavy construction throughout. Order now from your BUTLER distributor.

IS YOUR PLANT EQUIPPED FOR FULL EFFICIENCY?

Bring your plant to top operation with these BUTLER accessories that expedite production.

AIR JETS. Quick acting, positive, durable.

STEAM JETS. Essential for winter operation.

CEMENT AERATOR. Compressor, tank, motor, moisture trap and all controls in one package. Installs in any cement plant. Air automatically directed to air-jets under proper pressure. Dual pressure take-off for other uses.

BIN GATES. Every type for every material. Rotary, clamshell, roller, radial and quadrant. Keep extra gates on hand.

AUTOMATIC TURNHEAD. Push-button in control. Automatically discharges to any station from one to eight.

CONCRETE HOPPERS. Saves valuable truck waiting time. Sturdy, easily transported. Low cost repaid quickly.

For further information see your BUTLER distributor or write to

BUTLER BIN CO.

947 BLACKSTONE AVE.
WAUKESHA, WIS.

Hayward Buckets

Use this Class "E" Clam Shell Bucket for handling crushed stone, gravel, sand and other bulk materials.

THE HAYWARD CO., 48-50 Church St., N. Y.

GUNITE

PNEUMATICALLY PLACED CONCRETE
DENSE - DURABLE - HIGH STRENGTH

for

Restoring Disintegrated Concrete
Dam, Dock and Bridge Repairs
Steel Encasement and Fireproofing
Sewer, Water Pipe and Penstock Linings
Stack and Bunker Linings
Wood Pile Casings—Pressure Grouting
Prestressed Tanks and Silos

Get in touch with us for engineering data and estimates

GUNITE CONSTRUCTION CORPORATION
420 LEXINGTON AVE., NEW YORK 17, N.Y.
MURRAY HILL 3-7699

rial replace masonry or other materials in construction of exterior walls of buildings. Although still in a middle development stage, the technique has caused widespread interest. Examples used in this 24-p booklet have been developed over a period of two years. Scale drawings illustrate existing and planned types of stainless-steel curtain walls with specific attention given to such details as facings, insulation, joints, vents, window sections, and shapes and textures.—ALLEGHENY LUDLUM STEEL CORP., 2020 OLIVER BLDG., PITTSBURGH 22, PA.

Wire Rope for Scrapers—Informative folder lists specific reasons for recommending Streamlined scraper rope. Specifications for this rope are: 6x25 flattened strand; Lay-Set preformed; improved plow steel; Lang lay; and independent wire rope core. The folder points out definite advantages said to accrue through its use.—AMERICAN CHAIN & CABLE CO., INC., AMERICAN CABLE DIV., WILKES-BARRE, PA.

Packless Expansion Joints—Design and construction of Cornaflex corrugated packless expansion joints are listed in 16-p Bulletin R-35-51. Complete description of the line includes sizes, temperature and pressure ratings, and dimensions and weights. Simplified selection charts speed location of proper joint for most applications. Recommended installation practice is summarized, together with pertinent engineering information.—AMERICAN DISTRICT STEAM CO., NORTH TONAWANDA, N. Y.

Water Treatment; Chemical Mixing—Two additional technical supplements issued by American Well Works are: HE-1, describing the American Floesettler water-treatment unit for turbidity removal, softening, and waste treatment; and HM-1 on the American Homomix for chemical mixing without a mixing tank. These supplements are part of an overall plan to provide practical and helpful literature on modern waste and water-treatment methods and equipment.—THE AMERICAN WELL WORKS, AURORA, ILL.

Bitumuls Paving Handbook—Pocket-size handbook (80pp) covers all aspects of paving techniques using Bitumuls emulsified asphalt and other types of bituminous binders. The booklet is divided into five sections: (1) Information on paving methods and materials; (2) specifications on road and airport paving, including base, wearing surface, and seal; (3) complete tabular data on rate of application of asphaltic binders and quanti-

ties of aggregate required; (4) condensed Asphalt Institute specifications for asphalt cement and cutbacks; and (5) listing of an engineering library of free booklets covering individual types of construction.—AMERICAN BITUMULS CO., 200 BUSH ST., SAN FRANCISCO 4, CALIF.

Calgon—Two bulletins described Calgon, a vitreous sodium phosphate. One bulletin lists its use for prevention of lime-scale deposition by threshold treatment of water. The other bulletin describes the use of Calgon for oxidation and precipitation of iron or manganese in water.—CALGON, INC., SUBS. HAGAN CORP., HAGAN BLDG., PITTSBURGH, PA.

Residential Building Products—Technical Bulletin 57 (22 pp) presents new and improved products for residential construction. Items listed include windows of all types, heating products, pressure-treated lumber, steel framing, plastic-finished wall panels, electrical equipment, doors, concrete-form snap ties, and others.—THE PRODUCERS' COUNCIL, INC., 815 FIFTEENTH ST., WASHINGTON 5, D. C.

Rope Specifications Chart—Reference chart provides specifications on manila, nylon, and sisal ropes. Data covered include rope diameter, circumference, approximate net weight, approximate gross weight per coil, and breaking and working strength. Data is provided for sizes ranging from ¼ to 3½ in. in diameter.—NEW BEDFORD CORDAGE CO., NEW BEDFORD, MASS.

Roll Crushers—Sixteen-page bulletin describes Pioneer's new line of redesigned and improved twin and triple roll crushers. The bulletin describes and illustrates applications of roll crushers and contains tables and information to enable selection of proper type and size. Dimension and foundation data are included, and a chart shows expectable percentages of various sizes of material. Center spread shows a full cutaway view.—PIONEER ENGINEERING WORKS, INC., 1515 CENTRAL AVE., MINNEAPOLIS 13, MINN.

I-H Tractors—Catalog A-153-NN (24 pp) describes features of the International TD-14A crawler tractor. It is complete with photographs and sectional views. Form A-154-NN (24 pp) describes the International TD-18A crawler tractor. Produced in two colors, this catalog contains pictures, sectional views, and diagrams fully illustrating features of this tractor.—INTERNATIONAL HARVESTER CO., INDUSTRIAL POWER DIV., 180 N. MICHIGAN AVE., CHICAGO 1, ILL.

ADVERTISERS IN THIS ISSUE

Acker Drill Co. ... 105
Armco Drainage & Metal Products, Inc. ... 10
Atlas Powder Co. ... 66

Bailey Meter Company ... 78
Belmont Iron Works ... 79
Berger & Sons, Inc., C. L. ... 2
Bucyrus-Erie Co. ... 56, 57
Butler Bin Co. ... 110
Byers Co., A. M. ... 2nd Cover

Cement Gun Company ... 58
Chapman Valve & Mfg. Co. ... 65
Cities Service Companies ... 60
Complete Machinery & Equipment ... 68

Detroit Steel Products Co. ... 5
Detroit Diesel Engine Div., General Motors Corp. ... 54

Electric Tamper & Equipment ... 109
Eppinger & Russell Co. ... 82

Four Wheel Drive Auto Co. ... 63

Goodyear Tire & Rubber Company ... 1
Griffin Wellpoint Corporation ... 74
Grinnell Company, Inc. ... 103
Gunite Concrete & Construction Co. ... 84
Gunite Construction Company ... 110

Hayward Company ... 110
Hendrix Manufacturing Company, Inc. ... 46
Hendrick Manufacturing Company ... 64
Herman Nelson Div., American Air Filter Co., Inc. ... 62

Imperial Pencil Tracing Cloth ... 55
Industrial Brownhoist Corp. ... 79
Inland Steel Co. ... 18
International Harvester Co. ... 75
Irving Subway Grating Co. ... 58

Jaeger Machine Co. ... 11
Joy Mfg. Co. ... 12

Kinnear Mfg. Co. ... 73
Klemp Co., Wm. F. ... 105

Lehigh Portland Cement Co. ... 108
Link Belt Co. ... 69
Lock Joint Pipe Co. ... 59
Lukens Steel Co. ... 13

Master Builders Company ... 3rd Cover
Mayo Tunnel Equipment Co. ... 66
McGraw-Hill Book Company ... 51
McKiernan Terry Co. ... 84
Mixermobile Mfg. Co. ... 102
Mott Core Drilling Co. ... 82

Naylor Pipe Co. ... 8
Newman Brothers, Inc. ... 109
Northwest Engineering Company ... 3
Novo Engine Company ... 78

Ohio Locomotive Crane Co. ... 107
Oliver Corp. ... 49

Pennsylvania Drilling Co. ... 79
Pioneer Engineering Works ... 77
Pittsburgh Des Moines Steel Co. ... 74
Portland Cement Assn. ... 70
Pressure Concrete Company ... 79

Quaker State Oil Refining Corp. ... 53

Raymond Concrete Pile Corp. ... 15
Roebling's Sons Co., John A. ... 9
Rogers Iron Works Company ... 72
Ryerson & Sons, Inc., Jos. T. ... 73

Sauerman Bros., Inc. ... 64
Servicised Products Company ... 58
Simplex Valve & Meter Co. ... 61
Sinclair Refining Co. ... 6, 7
Sisalkraft Co. ... 47
Spencer White & Prentis, Inc. ... 82
Sprague & Henwood, Inc. ... 78
Standard Oil of Calif. ... 16
Stang Corp., John W. ... 82

Texas Company ... 4th Cover
Thew Shovel Company ... 100
Timken Roller Bearing Co. ... 4
Tinney Drilling Company ... 72
Torrington Co., Bantam Bearings Div. ... 83
Trailer Village, Inc. ... 84
Truscon Steel Company ... 80
Tube Turns, Inc. ... 106, 107

Underpinning & Foundation Co. ... 72
Union Wire Rope Corp. ... 84
Unit Crane & Shovel Corp. ... 67
U. S. Pipe & Foundry Co. ... 50
U. S. Steel Subsidiaries ... 22
United Steel Fabricators, Inc. ... 52
Universal Atlas Cement Co. ... 22
Universal Sewer Pipe Corp. ... 20

Vacuum Concrete, Inc. ... 78
Vulcan Iron Works ... 48

White & McColl, Inc. ... 72
Williams Co., J. H. ... 109
Winslow Scale Company ... 67
Wisconsin Motors Corp. ... 73
Wood & Co., R. D. ... 14
Worthington Pump & Machinery Co. ... 104

Professional Services ... 99

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT
Positions Vacant ... 90
Civil Service ... 90
Selling Opportunities Offered ... 90
Positions Wanted ... 90, 91
Employment Services ... 90

SPECIAL SERVICES
Contract Work ... 91

EDUCATIONAL
Schools ... 91
Tutoring ... 91

BUSINESS OPPORTUNITIES
Offered ... 91

NOTICES
Proposal ... 85-89

PROPERTY
Wanted ... 91

EQUIPMENT
(Used or Surplus New)
For Rent ... 90
For Sale ... 91-99
Piling ... 99
Pipe ... 99
Rail ... 99
Surveying Instruments ... 92

WANTED
Equipment ... 98
Miscellaneous ... 91

ADVERTISERS INDEX ... 88

ENGINEERING NEWS-RECORD

E. J. WEYERSER, *Manager* — H. T. SWAN, *Business Manager*

Sales Representatives: Fred G. Hudson and F. H. Hunt, 520 N. Michigan Ave., *Chicago* 11; Ralph Ireland, 68 Post Street, *San Francisco* 4; D. S. Robertson and W. G. Payne, 100 W. 42nd St., *New York* 18; A. R. Greaves, 17th and Sansom Sts., *Philadelphia* 3; E. F. Duff, Jr., Hanna Bldg., *Cleveland* 15; R. J. Hunt, Penobscot Bldg., *Detroit* 26; W. F. Donnell, Constitutional Bldg., *St. Louis* 8; H. L. Keeler, 1111 Wilshire Blvd., *Los Angeles* 17; Ralph Maulsby, Rhodes-Haverty Bldg., *Atlanta* 3; F. H. Allen, First National Bank Bldg., *Dallas* 1. Other sales offices: 2500 Otis Bldg., *Pittsburgh*; 1427 Statler Bldg., *Boston* 16; Aldwych House, *London*, England.

Timetable: World War II

Acceptance by the United States of the "police action" in Korea which was asked by the United Nations inevitably recreated a situation much like that into which this country was plunged just 10 years ago last month.

In the first half of 1940, there had been an awareness of growing U. S. defense needs—even some action to meet them. But few people were seriously concerned, then, as to the prospects that the U. S. was headed for history's greatest war.

Then, on a sunny June day, the President motored to Charlottesville, Va., to address a university graduating class. With one sentence, he ended an era.

"The hand that held the dagger," he stormed, "has thrust its into the back of its neighbor."

He called for an incredibly expanded defense, remember? He demanded 50,000 planes. It couldn't be done, most people agreed, but it was done—along with a multitude of more difficult accomplishments. Here, from the files of ENGINEERING NEWS-RECORD, is a record of the steps in doing it:

1940

Army, Navy prepare to construct by negotiated contract. (ENR 6/13).

Heavy construction contracts reach $217 million in one week. Army, Navy account for more than three-fourths of it. (7/18).

Army starts housing. (8/22).

Defense appropriations reach $13.5 billions in 14 months. Construction's share estimated at $2.1 billion. (10/24).

1941

Price Commissioner Henderson threatens to recommend Army price fixing if No. 2 Southern pine doesn't drop from $34 to $25 per Mbf. (1/30).

No priorities yet on steel. (2/13).

Lumber substitutes tried on bar racks. (2/20).

No structural steel shortage. (3/27).

Building trades promise to outlaw strikes and fees. (4/3).

Four to 12 weeks needed to get steel shapes. (5/22).

Unlimited National Emergency proclaimed. (6/5).

New type of control placed on steel, defense predicted. (6/5).

OPM (Office of Production Management) orders 10,000,000-ton steel expansion. (6/12).

Program drawn by OPM to stabilize labor wage rates. (7/3).

Federal Power Commission proposes three-year, 1,250,000-kw hydro expansion program. (7/24).

Steel in all forms goes under complete priority control. (8/14).

Priorities for defense housing still confused; building materials increasingly scarce. (8/21).

Southern pine formally put under price control at levels about $3 per Mbf under prevailing levels. No. 2 common set at about $26.50 per Mbf. (8/21).

Highway departments in desperate straits, lacking priorities (8/28).

Priority rating plan for roadwork now effective. (9/11).

SPAB (Supply, Priorities and Allocations Board) ends all priorities for non-defense work. (10/16).

SPAB clarifies policy. Stop-order not intended. (10/23).

Steel distribution to be shifted gradually to an allocation, rather than a priority, basis. (11/6).

AFL outlaws strikes. (12/11).

Congress ok's $10 billion defense appropriation, $3.5 billion of it for construction. (12/18).

1942

More limitations for non-war contracts. Civilian automobile production to end this month. (1/8).

Construction-cost increase in 1941 averaged 6.5%. (1/15).

Construction employment climbed 38% in 1941. (1/15).

War construction expenditures from April, 1940, through January, 1942, total $18.5 billion. (2/26).

Requisitioning seen likely for idle truck equipment. (3/5).

WPB drafts order halting non-essential construction. Residential construction under $1,000, others under $25,000 exempt. (3/19).

Navy enlisting construction forces for combat zone work. (4/2).

New construction curtailed by WPB conservation order. (4/16).

90% of all construction workers will be required on war jobs by end of 1942. (5/28).

Corps of Engineers abandons formal competition for bids. (6/4).

Korea no picnic—Picnic suffers

Mist shrouded the fairways of the North Hills Country Club on Long Island as the general contractors of the New York area began to tee off in their annual outing July 20. From the leaden, cloud-studded sky came a sudden downpour of rain. It ceased, but the mist persisted—now and then turning to a drizzle, infrequently rolling back to reveal, through rifts in the clouds, a clear sun-drenched sky.

Not unnoted was the fact that this was the same kind of weather that had prevailed in Korea for the past month—for Korea, paradoxically, was more important on this July 20 than missed putts. Less than 24 hours before, the President had asked Congress for men, money and materials to win the Korean war—and any more like it that might occur. And the contractors were quick to sense that their activities would be among the first to feel the effects. The men, the money and the materials could be had, but the greatest construction boom in history would have to slow down—or be altered to include more for war and less for luxuriant living.

Not even the carefree opportunities of an outing—golf, card games, nail driving contests and the like—could free the contractors' minds of the portents of change. Materials problems were first, manpower a close second.

"Where's the steel coming from for the X Building even if we get the contract? It's got no military significance and it takes 12,000 tons."

In the crowd watching the nail driving contest, someone said: "You better quit wasting those spikes. They'll be worth their weight in gold soon."

There was much talk of costs: "To keep above my break-even point requires a larger volume of business than I used to be able to dream of. If volume falls off, and wages go up, I'm in trouble. Wages will go up if war jobs start bidding for workers. Last time we let them go up, and absorbed the resulting inflation. Maybe we can't afford that this time and will need wage controls. I hate to think of it."

"A lot of my key men are in the reserves of the Seabees and the Corps of Engineers. Do they go or stay?"

Uncertainty, but neither lack of resolution nor of agreement with the nation's chosen course, marked the conversations. As an outing the occasion was something of a flop by previous standards. As an opportunity for construction men to examine their future it scored a marked success. And the weather showed what could happen in Korea—symbolic of what could happen here. The afternoon was clear.

Tansley Bridge, Hamilton, Ontario. 703 ft. long, height of deck above high-water level 112 ft. 8,000 cu. yds. of Pozzolith Concrete. Minister of Highways—Hon. Geo. H. Doucett, Deputy-Minister of Highways—J. D. Miller, Chief Bridge Engr.—Arthur Sedgewick, Toronto, Ontario, Gen. Contrs.—Therrien Construction Co. Ltd., Toronto, Ontario.

Good Placeability . . . Durability with POZZOLITH CONCRETE

OTHER MASTER BUILDERS PRODUCTS IN WHICH CEMENT DISPERSION IS EMPLOYED

EMBECO

For non-shrink grouting and re-integration.

MASTERPLATE

For "iron-clad" concrete floors —industry's toughest floor.

MASTERTEX

Cement-base paint of low permeability for protecting and decorating exterior and interior surfaces of concrete and masonry.

OMICRON MORTARPROOFING

For tight brick walls. Provides good workability with 15-20% less water, correct water retentivity. Contains stearate.

Pozzolith, Cement Dispersion proved advantageous in the construction of the piers and abutments for this modern highway bridge because it produced good workability *with reduced water.*

Good workability resulted in easy placing; reduced water content lowered permeability and provided great durability; reduced water and good cohesiveness resulted in minimized segregation. (Unretouched photos show that no patching was necessary.)

Investigate Pozzolith for your next job because: normal concrete of *any given quality* is produced at lower cost with Pozzolith than by any other means.

Full data on Pozzolith will be sent on request.

the MASTER BUILDERS Co

CLEVELAND 3, OHIO TORONTO, ONTARIO

Satisfied Cities

Worcester, Mass., has constructed more than 1,500,000 square yards of streets with Texaco Asphalt. Note the type and volume of traffic served by this Texaco-paved thoroughfare.

There are 49 important U. S. cities, each of which has constructed more than 500,000 square yards of Texaco Asphalt paving on its streets to date. That yardage is equivalent to 28 miles of paving, 30 feet wide.

These cities are widely scattered, representing 22 states. They include such leading cities as New York, Philadelphia, Norfolk, Milwaukee, Louisville, Houston and Denver.

Here is an impressive record of acceptance by a large group of representative cities, which provides substantial proof of the fine performance of Texaco Asphalt paving.

Texaco Asphalt products have been refined from selected crudes for 45 years. They include a complete range of uniformly high-grade Asphalt Cements, Cutback Asphalts and Slow-curing Asphaltic Oils. There is a type of Texaco Asphalt street construction exactly suited to your city's needs. For complete information on all methods of improving streets with asphalt, ask our nearest office to send you copies of our two illustrated Asphalt booklets. No obligation, of course.

—cities which have paved more than 28 miles of streets with Texaco

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City

Boston 16 Chicago 4 Denver 1 Houston 1 Jacksonville 2 Philadelphia 2 Richmond

TEXACO

REG. T. M.

TEXACO ASPHALT